FCC
MEASUREMENT AND TEST REPORT

For

ZTE Corporation

ZTE Plaza, Hi-tech Park, Nanshan District, Shenzhen,
Guangdong, China 518057

FCC ID: Q78-R8860EGU198A

Jun 10, 2011

This Report Concerns: ☒ Original Report	**Equipment Type:** GSM/UMTS Dual Mode Remote Radio Unit

Test Engineer: 

Report No.: FCC-2011-032

Test Date: Nov ,28 – Dec 31, 2010

Reviewed By: 

Prepared By: ZTE Corporation.

ZTE Plaza, Hi-tech Park, Nanshan District, Shenzhen,
Guangdong, China 518057, P.R.China Tel: +86-755-26770000
Fax: +86-755-26771999

TABLE OF CONTENTS

1 GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The ZTE Corporation's product, model number: ZXSDR R8860E GU198 or the "EUT" as referred to in this report is a dual-mode RF remote unit. It adopts the multi-carrier technology as its core technology and supports two radio systems: GSM and UMTS.R8860E GU198 can be used as an independent RRU for GSM or an independent RRU for UMTS, and it works with BBU to form the dual-mode base station.

Technical specification:
Size: 370 mm × 320 mm × 197 mm (H x W x D)
Input voltage: -48VDC
Frequency range: 1930MHz to 1970MHz,
Max RF output power: 49dBm, except GSM (8PSK modulation) :47dBm
Gain of the antenna: 18dBi
Modulation type of emission: UMTS 4 Carriers; GSM 6 TRX; 4 GSM TRX and 1 UMTS carriers or 2 GSM TRX and 2 UMTS carriers
Appearance of EUT:

Objective

This Type approval report is prepared on behalf of ZTE Corporation in accordance with Part 2、Part 15、Part 24 of the Federal Communication Commissions rules.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of federal Regulations Title 47 Part 2. as well as the following parts:
Part 24 Wireless Communication Services
Applicable Standards: TIA EIA 137-A, TIA EIA 97-D, TIA/EIA 603-C, Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.
All radiated and conducted measurement was performed at ZTE Corporation Reliability Testing Center. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

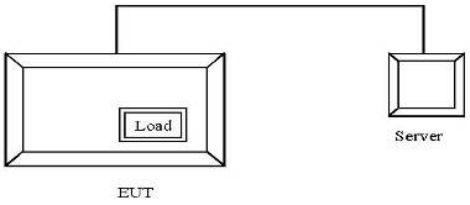
The Test site used by ZTE Corporation to collect test data is located in the 1/F, B2 Wing, ZTE plaza, Keji Road South, Shenzhen, Guangdong, 518057, P.R.China，Tel: 86-755-26771609，Fax: +86-755-26770347. Test site at ZTE Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.
The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 373926. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

2 SYSTEM TEST CONFIGURATION

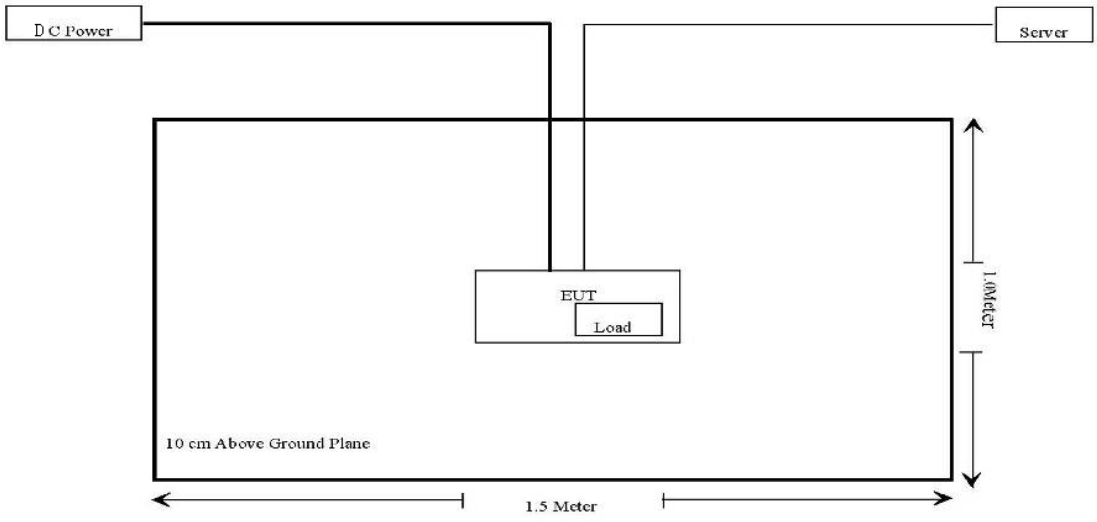
Description of Test Configuration

Justification
The EUT was configured for testing according to TIA/EIA-603C.
The final qualification test was performed with EUT operating at normal mode.
Equipment Modifications
ZTE Corporation has not done any modification on the EUT.

Configuration of Test Setup



Block Diagram of Test Setup



3 UMTS OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§2.1046 §24.232	Transmitter output Power	Compliant
§2.1091 §1.1037	RF Exposure	Compliant
§2.1047	Modulation Characteristic	Compliant
§2.1053	Spurious Radiated Emissions	Compliant
§2.1051, §24.238	Spurious Emissions AT Antenna Terminals	Compliant
§2.1049 §24.229 §24.238	Occupied Bandwidth	Compliant
§2.1051,§24.238	Band Edge	Compliant
§ 2.1055 § 24.235	Frequency stability	Compliant

3.1 TRANSMITTER OUTPUT POWER

Applicable Standard： FCC §2.1046 §24.232

According to FCC §2.1046 &24.232, the EIRP(equivalent isotropically radiated power) must not exceed 1640 Watts.
According to RSS-133, SRSP 510 5.1.1the EIRP(equivalent isotropically radiated power) must not exceed 3280Watts/MHz for base station transmitters operating in the band of 1930 MHz to 1995MHz with the antenna height above average terrain up to 300 meters. If used in urban area, the limit should be 1640Watts/MHz.

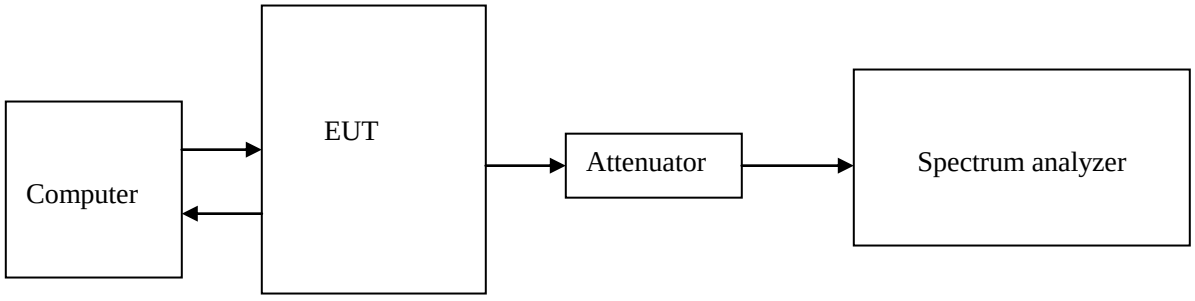
Note: EIRP= Max output Power+ Antenna gain- Cable Loss

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2011-4-8	2012-4-7
DTS	DTS100 40dB Attenuator	DTS100-40dB-N	N/A	N/A	N/A
Hewlett Packard	Hewlett Packard RF Cable	8120-6192	01428251	N/A	N/A

*__statement of traceability:__ ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements , traceable to NIST.

Test Procedure



The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. External attenuation Loss is 40dB, Cable Loss is about 3dB.

Environmental Conditions

Temperature:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

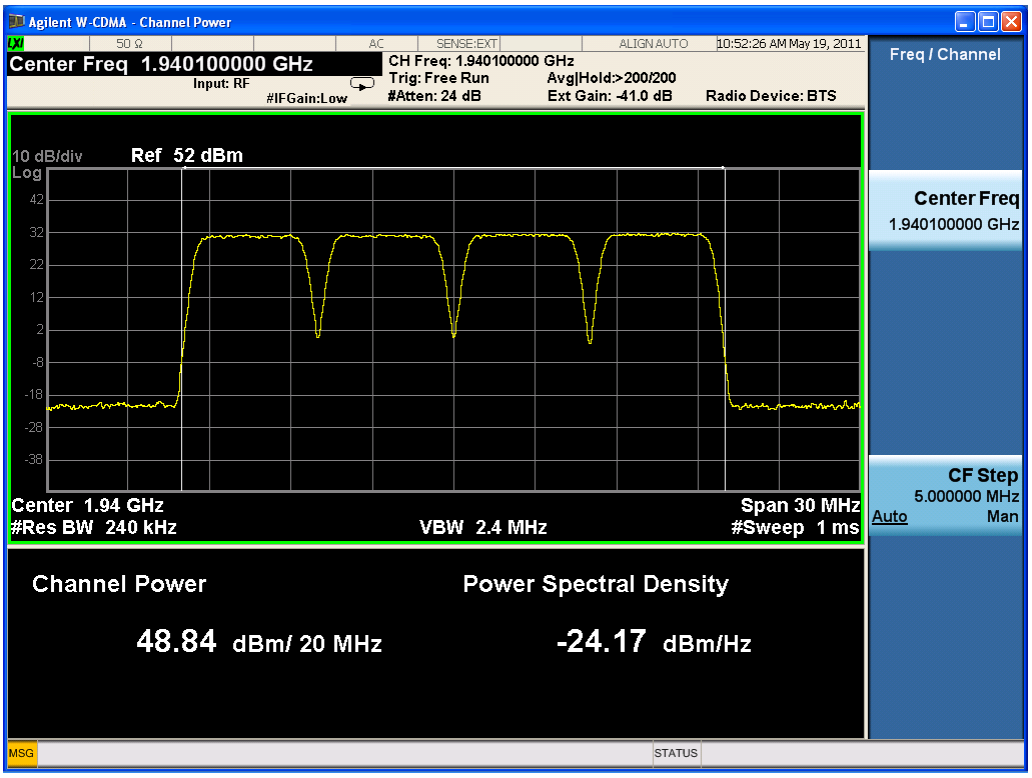
Test Result: Pass

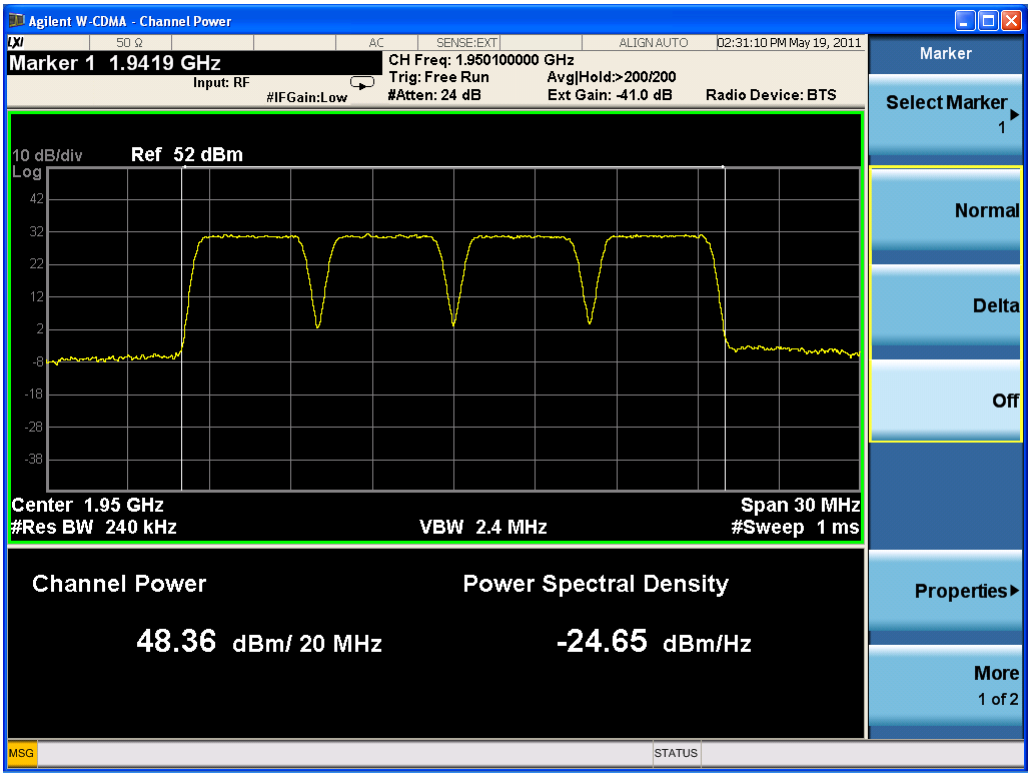
Test Mode: Transmitting UMTS

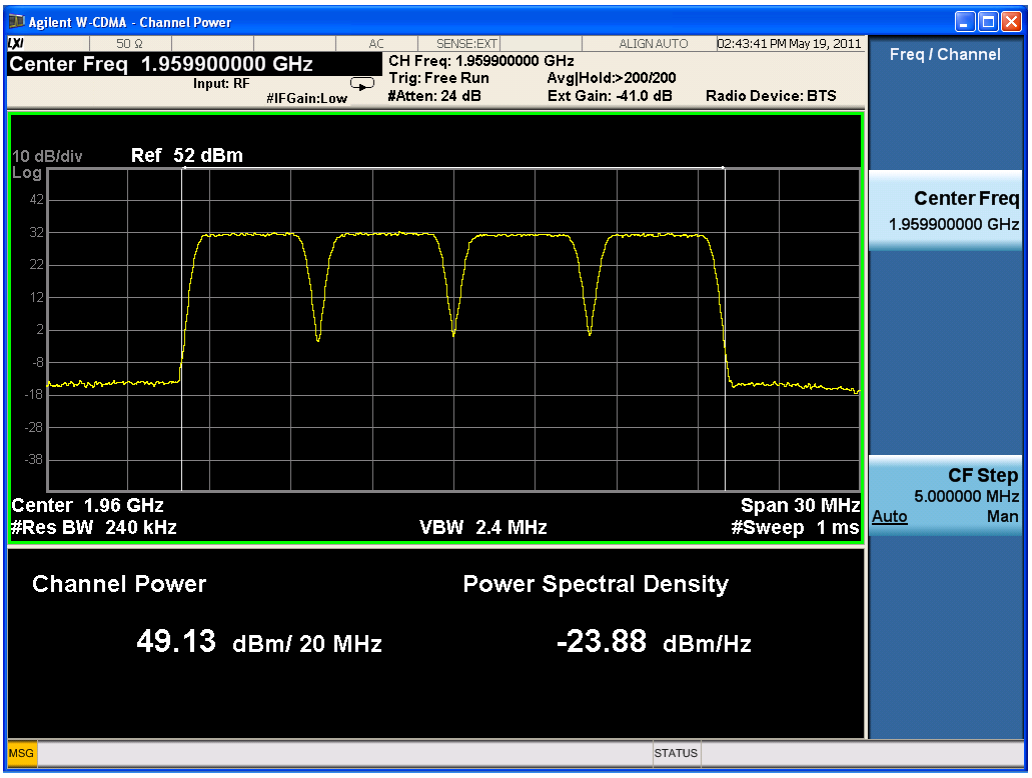
Test Data:

Four carriers

Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
1940.1	1932.6/1937.6/1942.6/1947.6	48.84
1950.1	1942.6/1947.6/1952.6/1957.6	48.36
1959.9	1952.4/1957.4/1962.4/1967.4	49.13

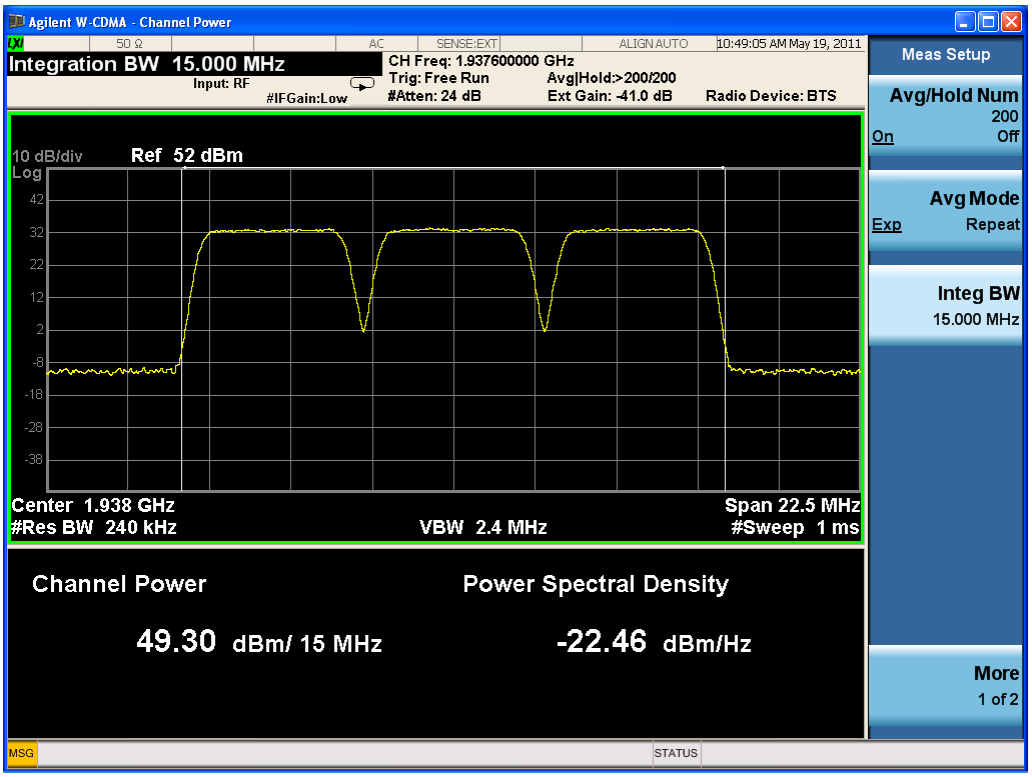

Agilent W-CDMA - Channel Power
50 Ω
AC
SENSE:EXT
ALIGN AUTO
10:52:26 AM May 19, 2011
Center Freq 1.940100000 GHz
Input: RF
#IFGain:Low
CH Freq: 1.940100000 GHz
Trig: Free Run
Avg|Hold:>200/200
#Atten: 24 dB
Ext Gain: -41.0 dB
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 52 dBm
42
32
22
12
2
-8
-18
-28
-38
Center 1.94 GHz
#Res BW 240 kHz
VBW 2.4 MHz
Span 30 MHz
#Sweep 1 ms
Center Freq
1.940100000 GHz
CF Step
5.000000 MHz
Auto
Man
Channel Power
48.84 dBm/ 20 MHz
Power Spectral Density
-24.17 dBm/Hz
MSG
STATUS

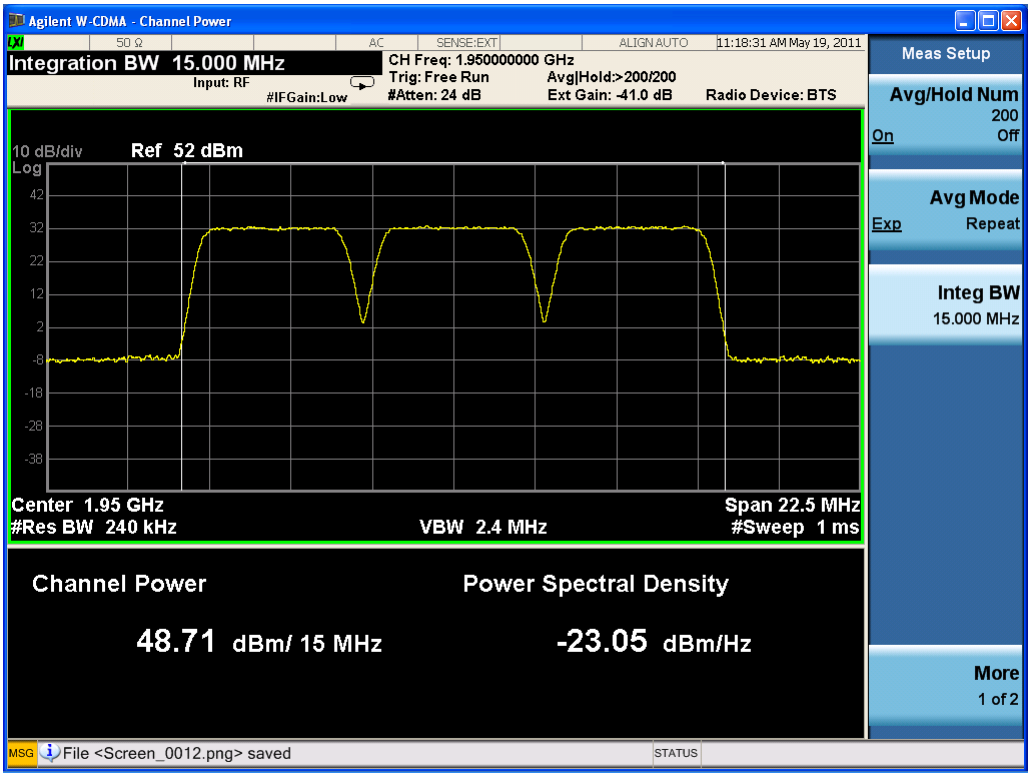

Agilent W-CDMA - Channel Power
50 Ω
AC
SENSE:EXT
ALIGN AUTO
02:31:10 PM May 19, 2011
Marker 1 1.9419 GHz
Input: RF
#IFGain:Low
CH Freq: 1.950100000 GHz
Trig: Free Run
Avg|Hold:>200/200
#Atten: 24 dB
Ext Gain: -41.0 dB
Radio Device: BTS
Marker
Select Marker
1
10 dB/div
Log
Ref 52 dBm
42
32
22
12
2
-8
-18
-28
-38
Center 1.95 GHz
#Res BW 240 kHz
VBW 2.4 MHz
Span 30 MHz
#Sweep 1 ms
Normal
Delta
Off
Channel Power
48.36 dBm/ 20 MHz
Power Spectral Density
-24.65 dBm/Hz
Properties
More
1 of 2
MSG
STATUS

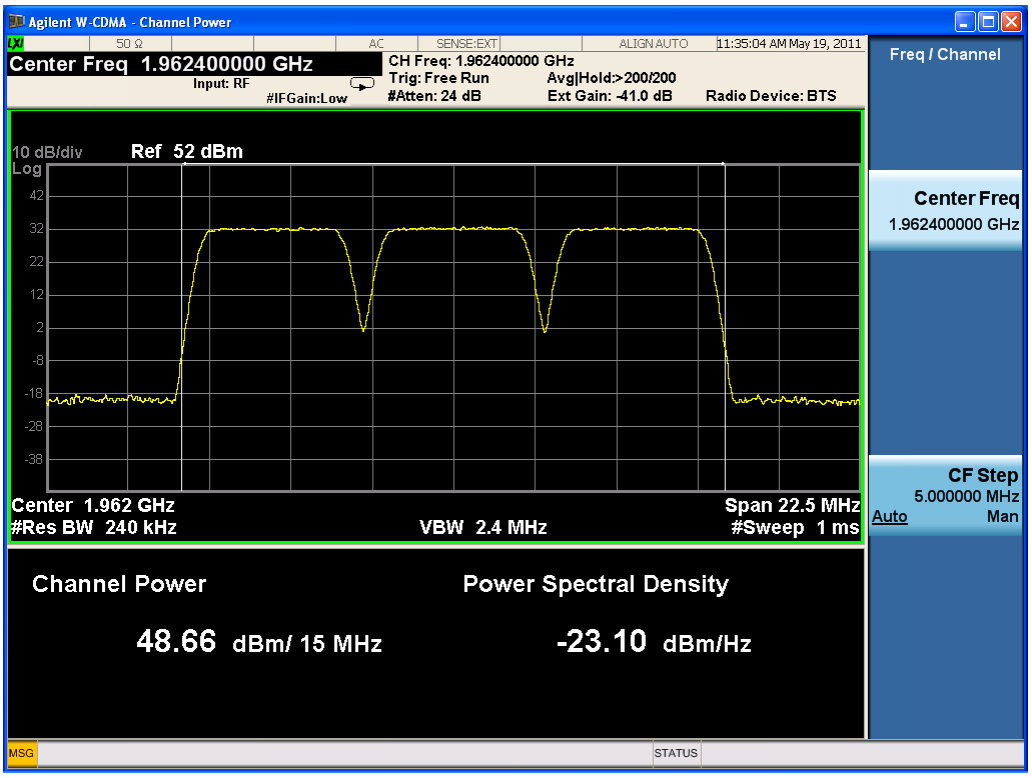


Three carriers

Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
1937.6	1932.6/1937.6/1942.6	49.30
1950	1945/1950/1955	48.71
1962.4	1957.4/1962.4/1967.4	48.66

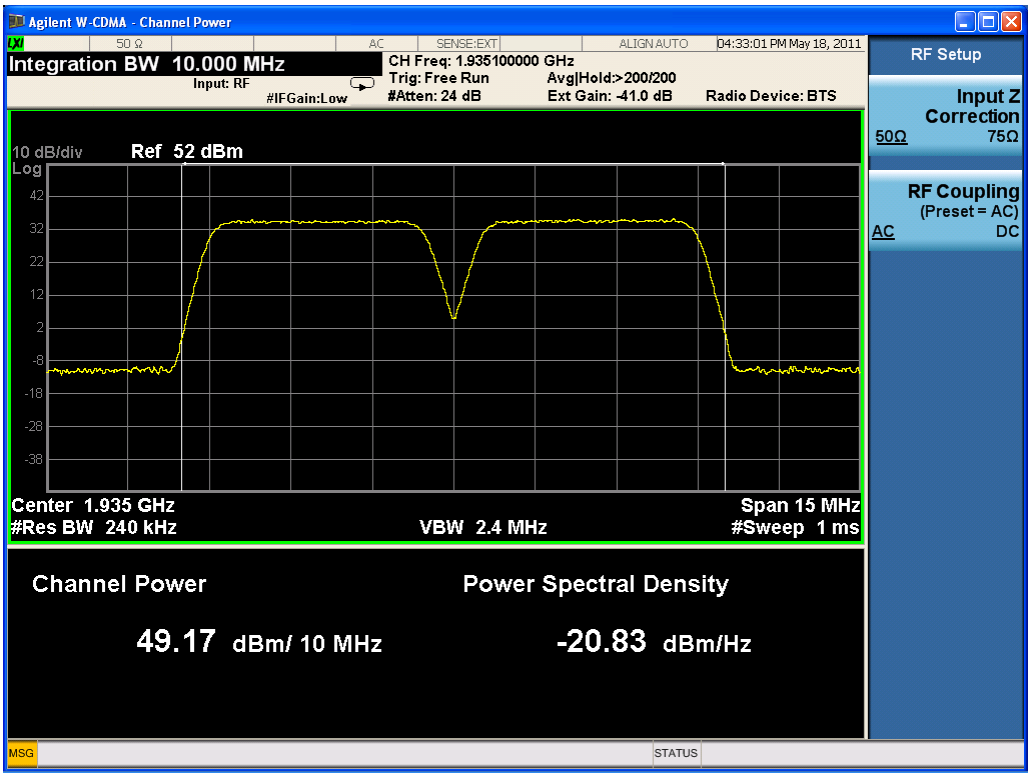

Agilent W-CDMA - Channel Power
50 Ω
AC
SENSE:EXT
ALIGN AUTO
10:49:05 AM May 19, 2011
Integration BW 15.000 MHz
Input: RF
#IFGain:Low
CH Freq: 1.937600000 GHz
Trig: Free Run
Avg|Hold:>200/200
#Atten: 24 dB
Ext Gain: -41.0 dB
Radio Device: BTS
Meas Setup
Avg/Hold Num
200
On
Off
Avg Mode
Exp
Repeat
Integ BW
15.000 MHz
10 dB/div
Log
Ref 52 dBm
42
32
22
12
2
-8
-18
-28
-38
Center 1.938 GHz
#Res BW 240 kHz
VBW 2.4 MHz
Span 22.5 MHz
#Sweep 1 ms
Channel Power
49.30 dBm/ 15 MHz
Power Spectral Density
-22.46 dBm/Hz
More
1 of 2
MSG
STATUS

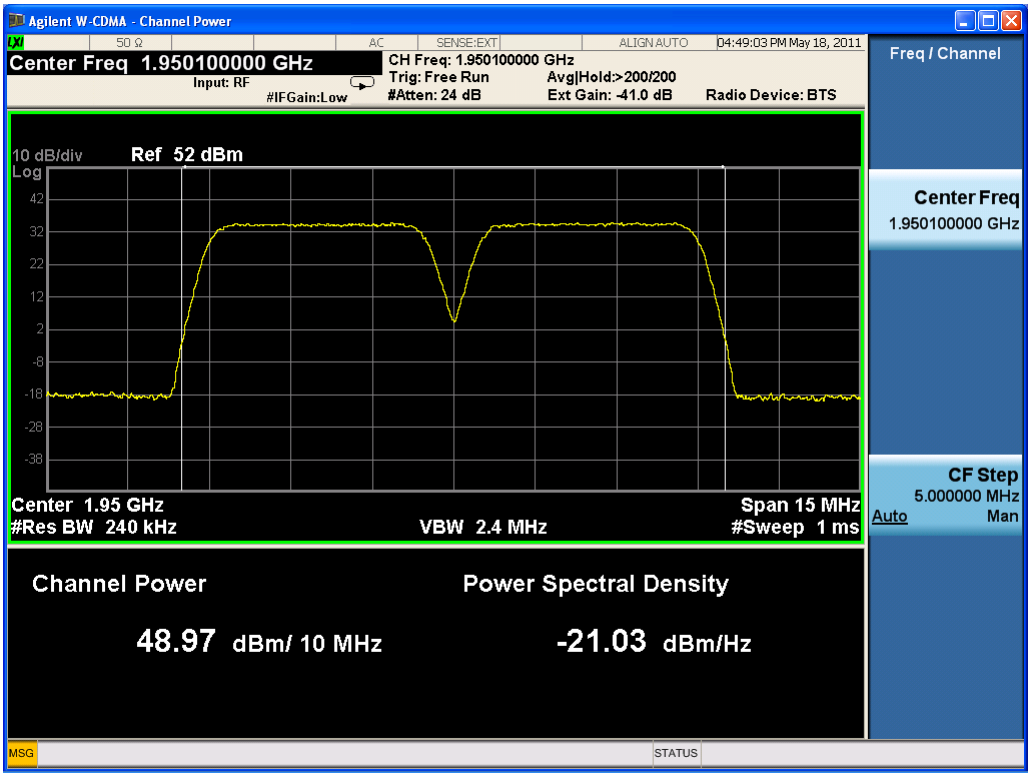

Agilent W-CDMA - Channel Power
50 Ω
AC
SENSE:EXT
ALIGN AUTO
11:18:31 AM May 19, 2011
Integration BW 15.000 MHz
Input: RF
#IFGain:Low
CH Freq: 1.950000000 GHz
Trig: Free Run
Avg|Hold:>200/200
#Atten: 24 dB
Ext Gain: -41.0 dB
Radio Device: BTS
Meas Setup
Avg/Hold Num
200
On
Off
Avg Mode
Exp
Repeat
Integ BW
15.000 MHz
10 dB/div
Log
Ref 52 dBm
42
32
22
12
2
-8
-18
-28
-38
Center 1.95 GHz
#Res BW 240 kHz
VBW 2.4 MHz
Span 22.5 MHz
#Sweep 1 ms
Channel Power
48.71 dBm/ 15 MHz
Power Spectral Density
-23.05 dBm/Hz
More
1 of 2
MSG
File <Screen_0012.png> saved
STATUS

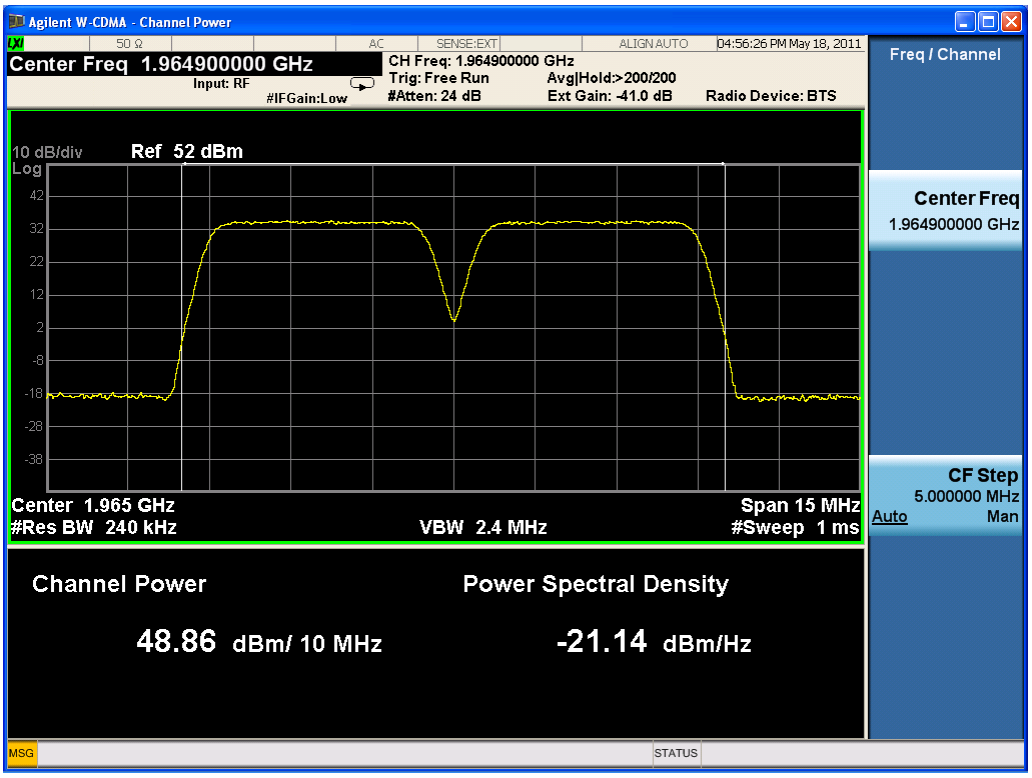


Two carriers

Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
1935.1	1932.6/1937.6	49.17
1950.1	1947.6/1952.6	48.97
1964.9	1962.4/1967.4	48.86

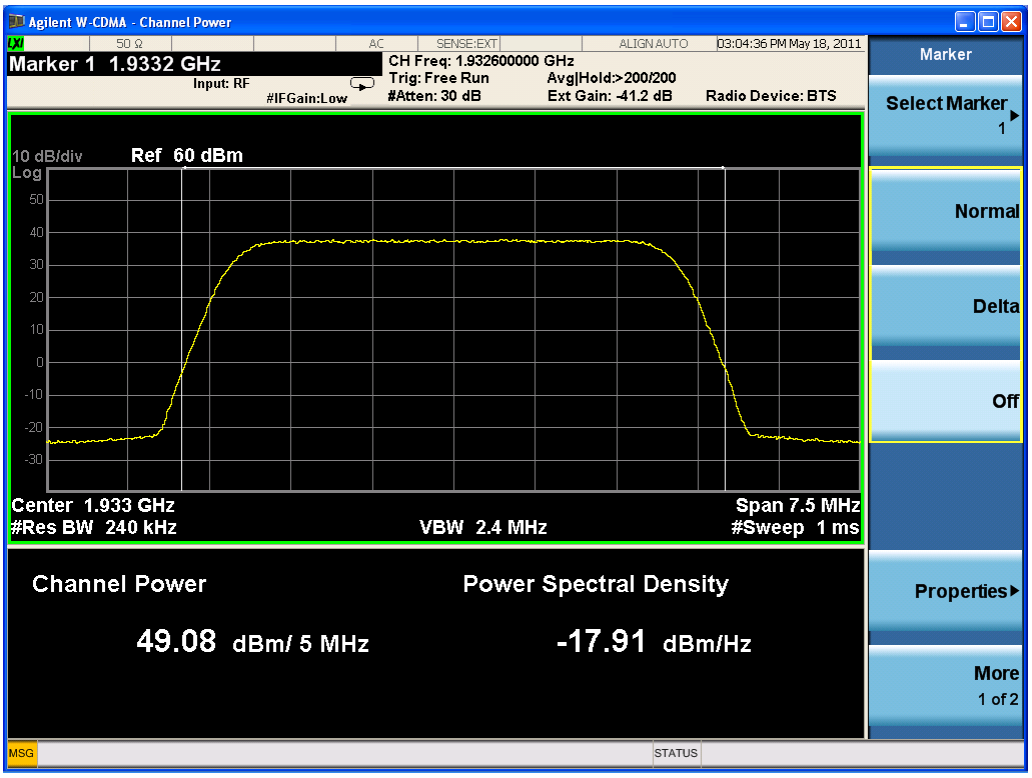

Agilent W-CDMA - Channel Power
50 Ω
AC
SENSE:EXT
ALIGN AUTO
04:33:01 PM May 18, 2011
Integration BW 10.000 MHz
Input: RF
#IFGain:Low
CH Freq: 1.935100000 GHz
Trig: Free Run
Avg|Hold:>200/200
#Atten: 24 dB
Ext Gain: -41.0 dB
Radio Device: BTS
RF Setup
Input Z Correction
50Ω
75Ω
RF Coupling
(Preset = AC)
AC
DC
10 dB/div
Log
Ref 52 dBm
42
32
22
12
2
-8
-18
-28
-38
Center 1.935 GHz
#Res BW 240 kHz
VBW 2.4 MHz
Span 15 MHz
#Sweep 1 ms
Channel Power
49.17 dBm/ 10 MHz
Power Spectral Density
-20.83 dBm/Hz
MSG
STATUS

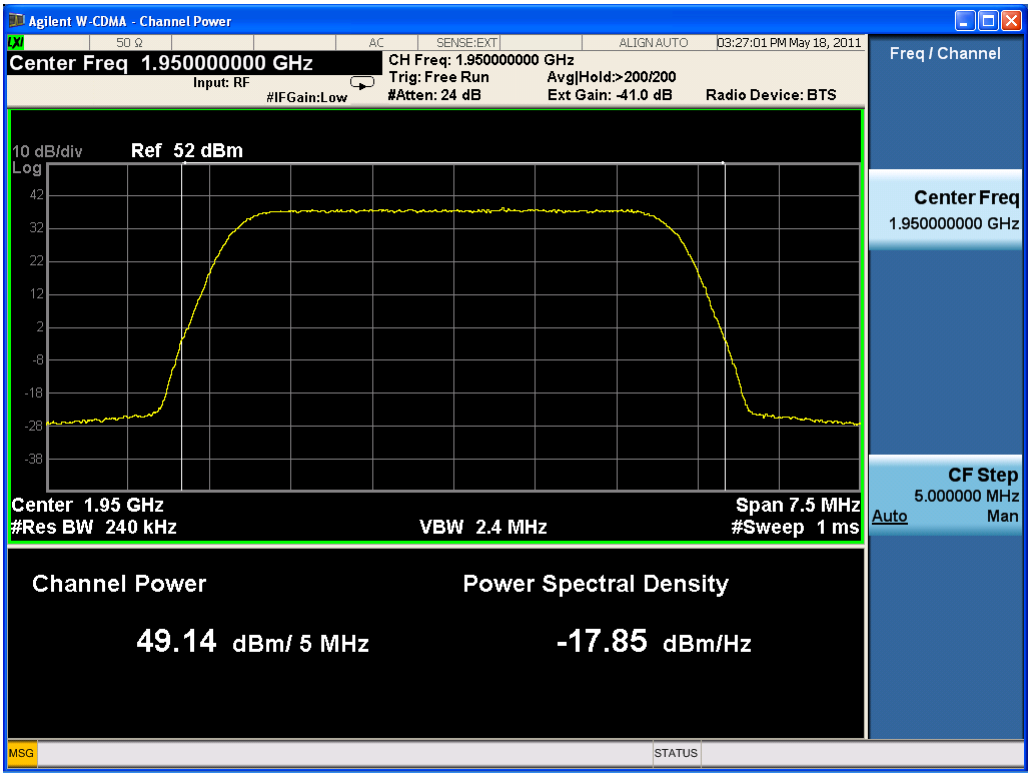

Agilent W-CDMA - Channel Power
50 Ω
AC
SENSE:EXT
ALIGN AUTO
04:49:03 PM May 18, 2011
Center Freq 1.950100000 GHz
Input: RF
#IFGain:Low
CH Freq: 1.950100000 GHz
Trig: Free Run
Avg|Hold:>200/200
#Atten: 24 dB
Ext Gain: -41.0 dB
Radio Device: BTS
Freq / Channel
Center Freq
1.950100000 GHz
CF Step
5.000000 MHz
Auto
Man
10 dB/div
Log
Ref 52 dBm
42
32
22
12
2
-8
-18
-28
-38
Center 1.95 GHz
#Res BW 240 kHz
VBW 2.4 MHz
Span 15 MHz
#Sweep 1 ms
Channel Power
48.97 dBm/ 10 MHz
Power Spectral Density
-21.03 dBm/Hz
MSG
STATUS

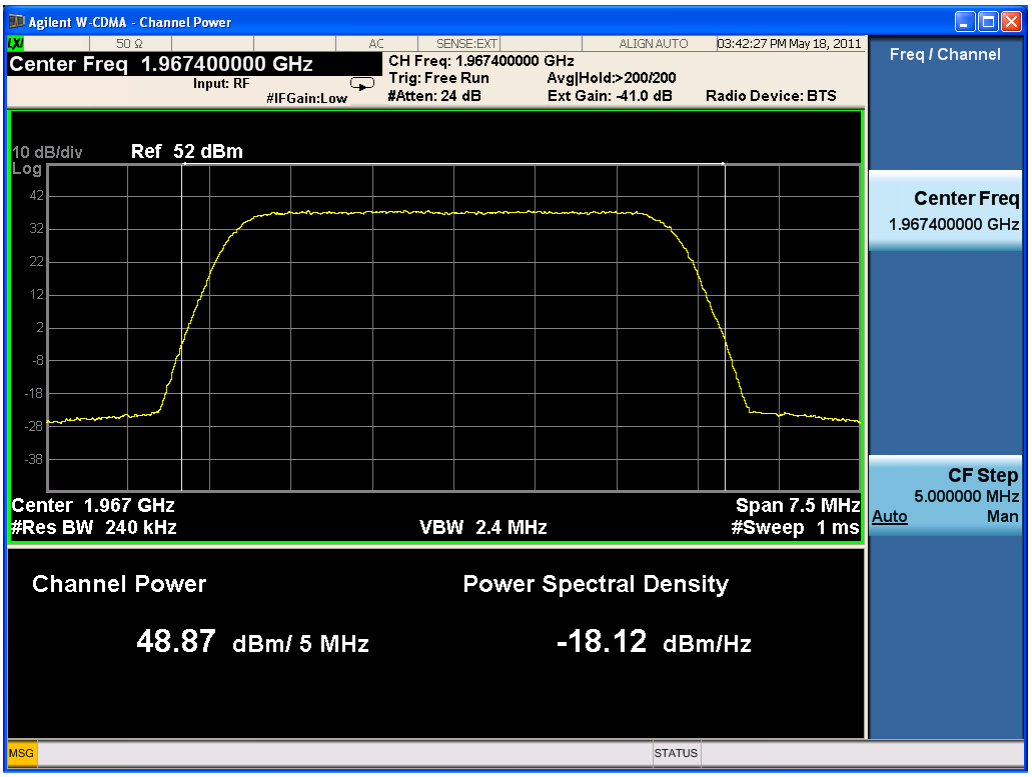


One carrier

Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
1932.6	1932.6	49.08
1950	1950	49.14
1967.4	1967.4	48.87


Agilent W-CDMA - Channel Power
50 Ω
AC
SENSE:EXT
ALIGN AUTO
03:04:36 PM May 18, 2011
Marker 1 1.9332 GHz
Input: RF
#IFGain:Low
CH Freq: 1.932600000 GHz
Trig: Free Run
Avg|Hold:>200/200
#Atten: 30 dB
Ext Gain: -41.2 dB
Radio Device: BTS
Marker
Select Marker 1
Normal
Delta
Off
10 dB/div
Log
Ref 60 dBm
50
40
30
20
10
0
-10
-20
-30
Center 1.933 GHz
#Res BW 240 kHz
VBW 2.4 MHz
Span 7.5 MHz
#Sweep 1 ms
Channel Power
49.08 dBm/ 5 MHz
Power Spectral Density
-17.91 dBm/Hz
Properties
More 1 of 2
MSG
STATUS


Agilent W-CDMA - Channel Power
50 Ω
AC
SENSE:EXT
ALIGN AUTO
03:27:01 PM May 18, 2011
Center Freq 1.950000000 GHz
Input: RF
#IFGain:Low
CH Freq: 1.950000000 GHz
Trig: Free Run
Avg|Hold:>200/200
#Atten: 24 dB
Ext Gain: -41.0 dB
Radio Device: BTS
Freq / Channel
Center Freq 1.950000000 GHz
10 dB/div
Log
Ref 52 dBm
42
32
22
12
2
-8
-18
-28
-38
Center 1.95 GHz
#Res BW 240 kHz
VBW 2.4 MHz
Span 7.5 MHz
#Sweep 1 ms
CF Step 5.000000 MHz
Auto
Man
Channel Power
49.14 dBm/ 5 MHz
Power Spectral Density
-17.85 dBm/Hz
MSG
STATUS


Agilent W-CDMA - Channel Power
50 Ω
AC
SENSE:EXT
ALIGN AUTO
03:42:27 PM May 18, 2011
Center Freq 1.967400000 GHz
Input: RF
#IFGain:Low
CH Freq: 1.967400000 GHz
Trig: Free Run
#Atten: 24 dB
Avg|Hold:>200/200
Ext Gain: -41.0 dB
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 52 dBm
42
32
22
12
2
-8
-18
-28
-38
Center Freq
1.967400000 GHz
CF Step
5.000000 MHz
Auto
Man
Center 1.967 GHz
#Res BW 240 kHz
VBW 2.4 MHz
Span 7.5 MHz
#Sweep 1 ms
Channel Power
48.87 dBm/ 5 MHz
Power Spectral Density
-18.12 dBm/Hz
MSG
STATUS

3.2 RF EXPOSURE

Applicable standard: FCC §2.1091 and §1.1037

Limit

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated. Limits for Maximum Permissible Exposure (MPE)

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $|E|^2$, $|H|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

Test Data

Predication of MPE limit at a given distance
Equation from page 18 of OET Bulletin 65, Edition 97-01
$S = EIRP/ 4\pi R^2$
Where: S = power density
EIRP = equivalent isotropically radiated power=ERP+2.15dB
R = distance to the center of radiation of the antenna=$[(ERP+2.15\ dB)/ 4\pi S]^{1/2}$

Maximum EIRP, In general, the equivalent isotropically radiated power (EIRP) of base transmitters and cellular repeaters must not exceed 1640 Watts.
Frequency is between 1500MHz and 100,000MHz, and the Maximum $S=1.0mW/cm^2$, so R=3.61m.
This equipment should be installed and operated with minimum distance 3.61m between the radiator& your body.

Test Result: pass

3.3 MODULATION CHARACTERISTIC

Applicable Standard: FCC §2.1047

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2011-4-8	2012-4-7
DTS	DTS100 40dB Attenuator	DTS100-40dB-N	N/A	N/A	N/A
Hewlett Packard	Hewlett Packard RF Cable	8120-6192	01428251	N/A	N/A

*__statement of traceability:__ ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements , traceable to NIST.

Test Procedure

UMTS digital mode is used by EUT.

Test Data Environmental Conditions

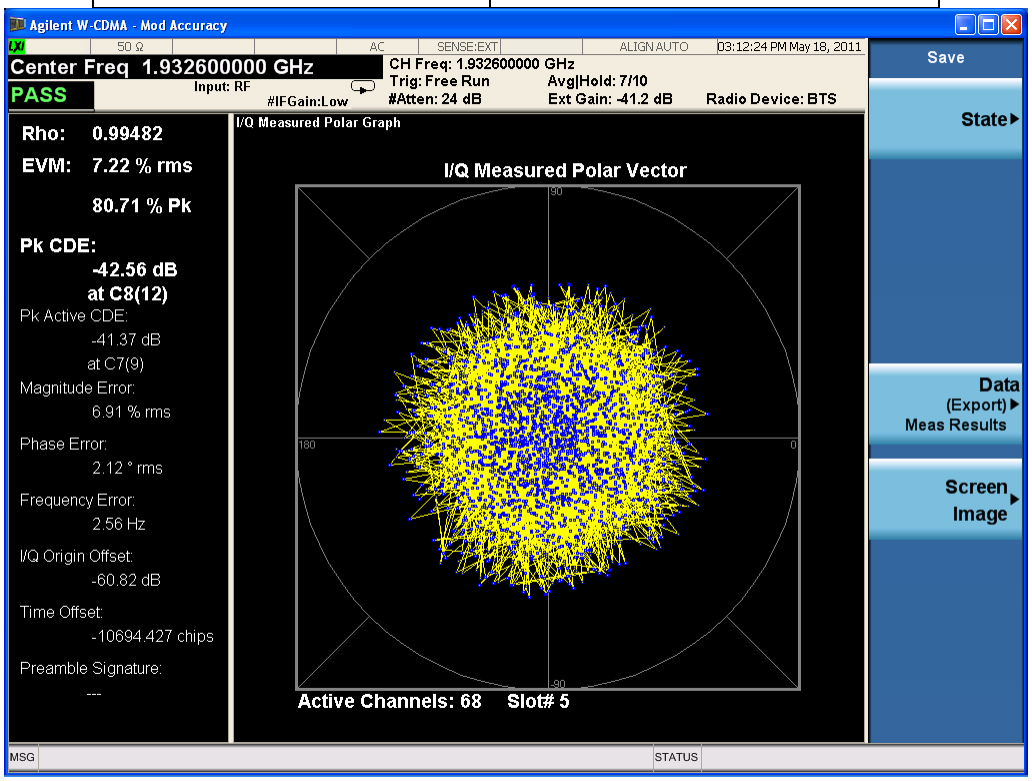
Temperature:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

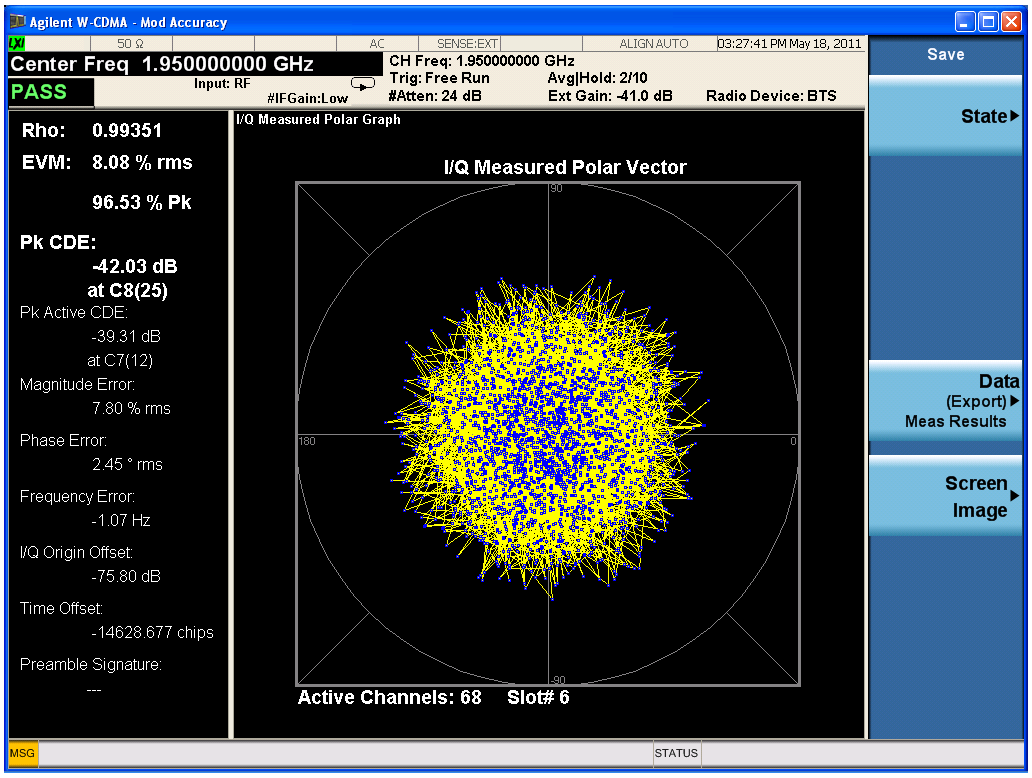
Test Result: Pass

Test Mode: Transmitting UMTS

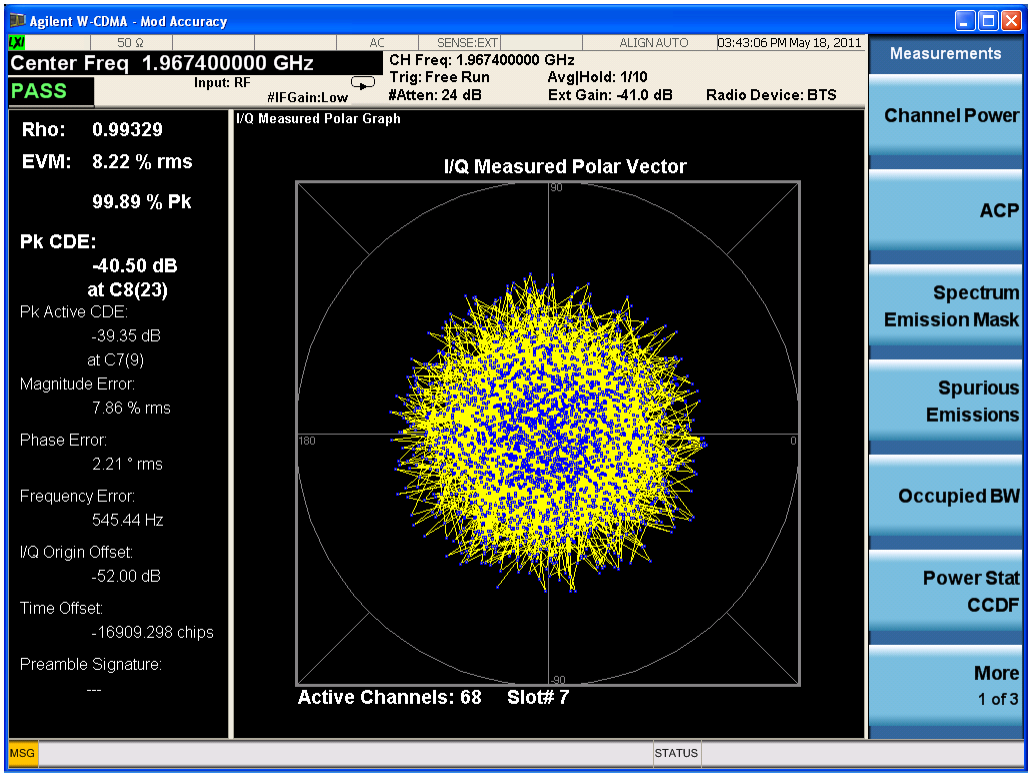
Test Data:

Frequency (MHz)	Rho
1932.6	0.99482
1950	0.99351
1967.4	0.99329




Agilent W-CDMA - Mod Accuracy
Center Freq 1.950000000 GHz
PASS
Input: RF
#IFGain:Low
CH Freq: 1.950000000 GHz
Trig: Free Run
#Atten: 24 dB
Avg|Hold: 2/10
Ext Gain: -41.0 dB
Radio Device: BTS
03:27:41 PM May 18, 2011
Rho: 0.99351
EVM: 8.08 % rms
96.53 % Pk
Pk CDE:
-42.03 dB
at C8(25)
Pk Active CDE:
-39.31 dB
at C7(12)
Magnitude Error:
7.80 % rms
Phase Error:
2.45 ° rms
Frequency Error:
-1.07 Hz
I/Q Origin Offset:
-75.80 dB
Time Offset:
-14628.677 chips
Preamble Signature:

I/Q Measured Polar Graph
I/Q Measured Polar Vector
Active Channels: 68 Slot# 6
Save
State
Data
(Export)
Meas Results
Screen
Image
MSG
STATUS


Agilent W-CDMA - Mod Accuracy
Center Freq 1.967400000 GHz
PASS
Input: RF
#IFGain:Low
CH Freq: 1.967400000 GHz
Trig: Free Run
#Atten: 24 dB
Avg|Hold: 1/10
Ext Gain: -41.0 dB
Radio Device: BTS
03:43:06 PM May 18, 2011
Rho: 0.99329
EVM: 8.22 % rms
99.89 % Pk
Pk CDE:
-40.50 dB
at C8(23)
Pk Active CDE:
-39.35 dB
at C7(9)
Magnitude Error:
7.86 % rms
Phase Error:
2.21 ° rms
Frequency Error:
545.44 Hz
I/Q Origin Offset:
-52.00 dB
Time Offset:
-16909.298 chips
Preamble Signature:

I/Q Measured Polar Graph
I/Q Measured Polar Vector
Active Channels: 68 Slot# 7
Measurements
Channel Power
ACP
Spectrum
Emission Mask
Spurious
Emissions
Occupied BW
Power Stat
CCDF
More
1 of 3
MSG
STATUS

3.4 SPURIOUS RADIATED EMISSIONS

Applicable Standard: FCC CFR 47, §2.1053

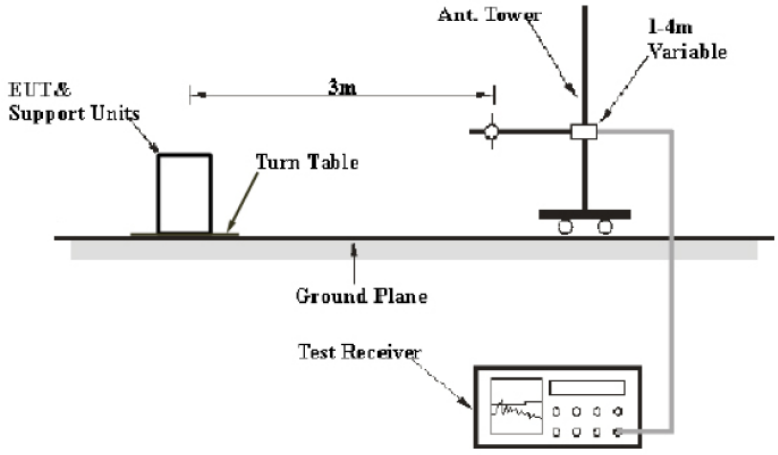
Test Equipment List and Details

Manufacturer	Equipment	Model	Serial Number	Last Cal.	Cal. Interval
Albatross	Anechoic Chamber	3m Site	A00017354	2010-6-30	1 year
R&S	EMI Test Receiver	ESI26	100058	2010-10-29	1 year
R&S	Log periodic Antenna	HL562	100022	2010-8-5	1 year
R&S	Double-Ridged Waveguide Horn Antenna	HF906 TX	100032	2010-8-5	1 year

*__statement of traceability:__ ZTE Corporation Testing lab attest that all calibration have been performed per the NVLAP requirements, traceable to NIST.

Measurement Uncertainty
All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.
Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiated emissions measurement at the EMC lab of ZTE Corp. is 3.6dB.

EUT Setup



The radiated emission tests were performed in the 3-meter Chamber, using the setup accordance with the FCC part 2.1053.The specification used was the FCC 2.1053 limits.

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.
The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT .The test was performed by placing the EUT on 3-orthogonal axis.
The frequency range up to teeth harmonic of the fundamental frequency was investigated.
Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.
Spurious emissions in dB =10 1g (TX pwr in Watts/0.001)-the absolute level
Spurious attenuation limit in dB =43+10 Lg P (power out in Watts)
The resolution bandwidth of the spectrum analyzer was set at 100KHz for 30MHz to 1GHz scanning, set at 1MHz or 3MHz for 1GHz to 20GHz scanning.

Test Results Summary: PASS

Environmental Conditions

Temperature:	26°C
Relative Humidity:	60 %
ATM Pressure:	1009 mbar

Test data

Indicated		Table	Test Antenna		Substituted		Cable Loss (dB)	Effective radiated power（dBm）	Dipole Antenna	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (GHz)	Amp. (dBuV)	Angle Degree	Height(M)	Polar H/V	Level (dBm)	Antenna Gain Correction						
63.046092	51	359.90	1	V	-16.2	-27.24	0.6	-44.04	2.15	-46.19	-13	33.19
64.98998	50.95	359.90	1	V	-16.25	-27.24	0.6	-44.09	2.15	-46.24	-13	33.24
204.9499	44.42	129.00	1	V	-46.24	0.87	1.1	-46.47	2.15	-48.62	-13	35.62
1348.6974	48.05	129.00	1	V	-55.74	4.25	3.1	-54.59	2.15	-56.74	-13	43.74
1933.86774	90.86	216.70	1	V	-16.5	6.55	3.7	-13.65	2.15	-15.8	-13	2.8
2927.85571	60.4	25.40	2	V	-41.34	7.95	4.6	-37.99	2.15	-40.14	-13	27.14
206.893788	50.09	311.20	1	H	-49.57	0.87	1.1	-49.8	2.15	-51.95	-13	38.95
607.334669	38.54	55.80	2	H	-58.11	-1.39	2	-61.5	2.15	-63.65	-13	50.65
922.244489	47.66	142.90	2	H	-48.49	-2.69	2.5	-53.68	2.15	-55.83	-13	42.83
1368.73748	47.89	230.90	2	H	-58.21	4.25	3.1	-57.06	2.15	-59.21	-13	46.21
1933.86774	90.76	55.80	2	H	-15.84	6.55	3.7	-12.99	2.15	-15.14	-13	2.14
2827.65531	61.03	55.80	2	H	-43.08	7.95	4.4	-39.53	2.15	-41.68	-13	28.68

Radiation emission spurious below 3GHz

Indicated		Table	Test Antenna		Substituted		Cable Loss (dB)	Effective radiated power（dBm）	Dipole Antenna	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (GHz)	Amp. (dBuV)	Angle Degree	Height(M)	Polar H/V	Level (dBm)	Antenna Gain Correction						
3865.73146	53.49	252.10	1	V	-52.16	7.75	5.2	-49.61	2.15	-51.76	-13	38.76
5621.24249	49.37	103.00	2	V	-57.26	9.05	6.5	-54.71	2.15	-56.86	-13	43.86
5797.59519	64.11	175.60	2	V	-39.37	9.05	6.5	-36.82	2.15	-38.97	-13	25.97
10204.4088	58.57	175.60	2	V	-50.25	11.35	8.9	-47.8	2.15	-49.95	-13	36.95
14476.9539	63	180.40	1	V	-46.52	9.65	10.9	-47.77	2.15	-49.92	-13	36.92
3865.73146	55.95	323.60	1	H	-45.61	7.75	5.2	-43.06	2.15	-45.21	-13	32.21
5605.21042	48.27	180.50	1	H	-50.34	9.05	6.5	-47.79	2.15	-49.94	-13	36.94
5797.59519	67.17	252.10	1	H	-31.44	9.05	6.5	-28.89	2.15	-31.04	-13	18.04
10204.4088	57.92	249.00	2	H	-51.02	11.35	8.9	-48.57	2.15	-50.72	-13	37.72
14555.1102	62.85	31.90	2	H	-45.5	9.15	11	-47.35	2.15	-49.5	-13	36.5

Radiation emission spurious above 3GHz

3.5 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard: FCC§2.1051, §24.238

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified.

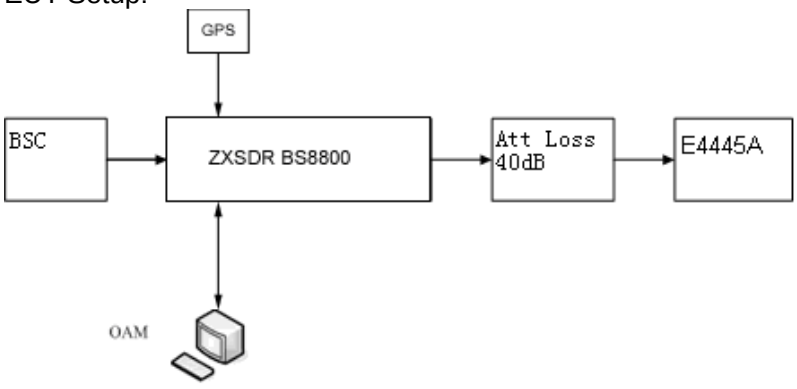
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2011-4-8	2012-4-7
DST	DST100 40dB Attenuator	DTS100-40dB-N	N/A	N/A	N/A
Hewlett Packard	Hewlett Packard RF Cable	8120-6192	01428251	N/A	N/A

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements , traceable to NIST.

Test Procedure

EUT Setup:



REMARKS: Attenuator loss (dB)=40dB, Cable Loss (dB)=3dB.

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1 kHz for 9KHz to 150KHZ scaning, set at 10KHz for 150KHz to 30MHz scaning ,set at 100KHz for 30MHz to 1GHz scaning, set at 1MHz or 3MHz for 1GHz to 22GHz scaning. Sufficient scans were

taken to show any out of band emissions up to 10th harmonic.

Test Data Environmental Conditions

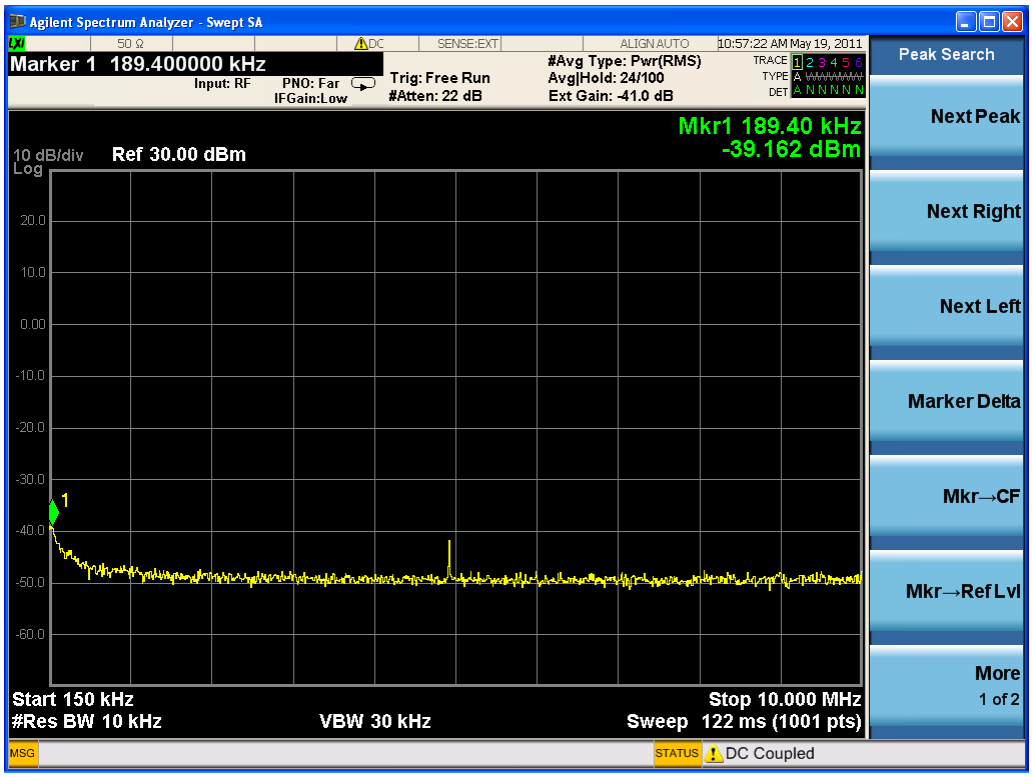
Temperature:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

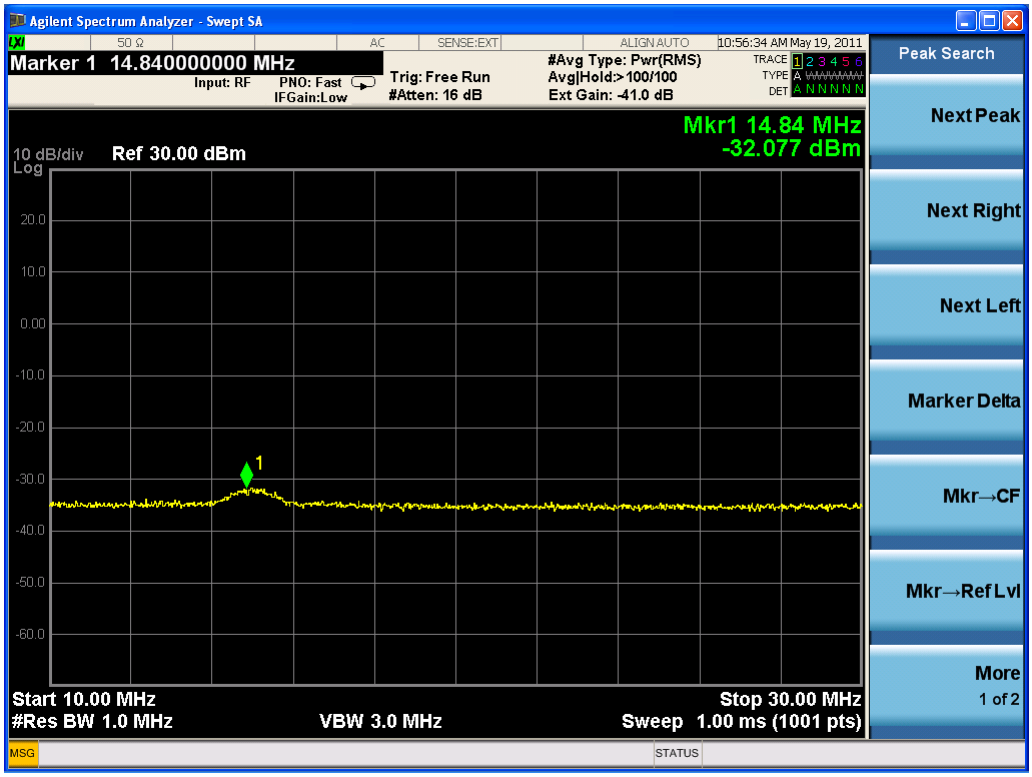
Test Result: Pass

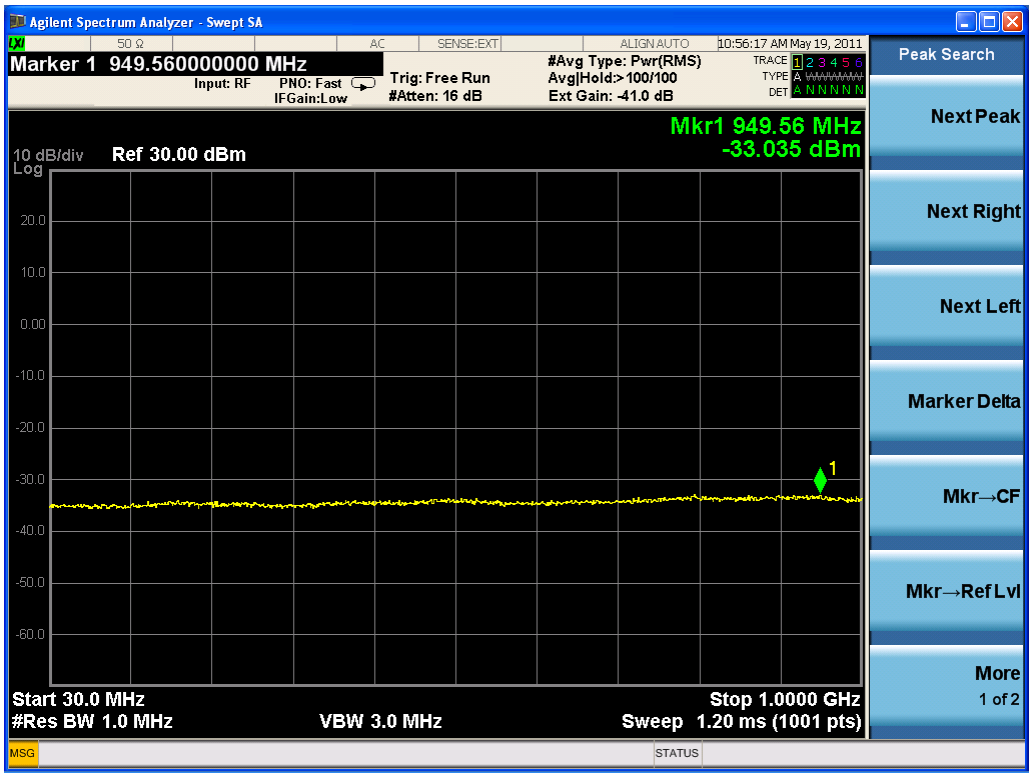
Test Mode: Transmitting UMTS

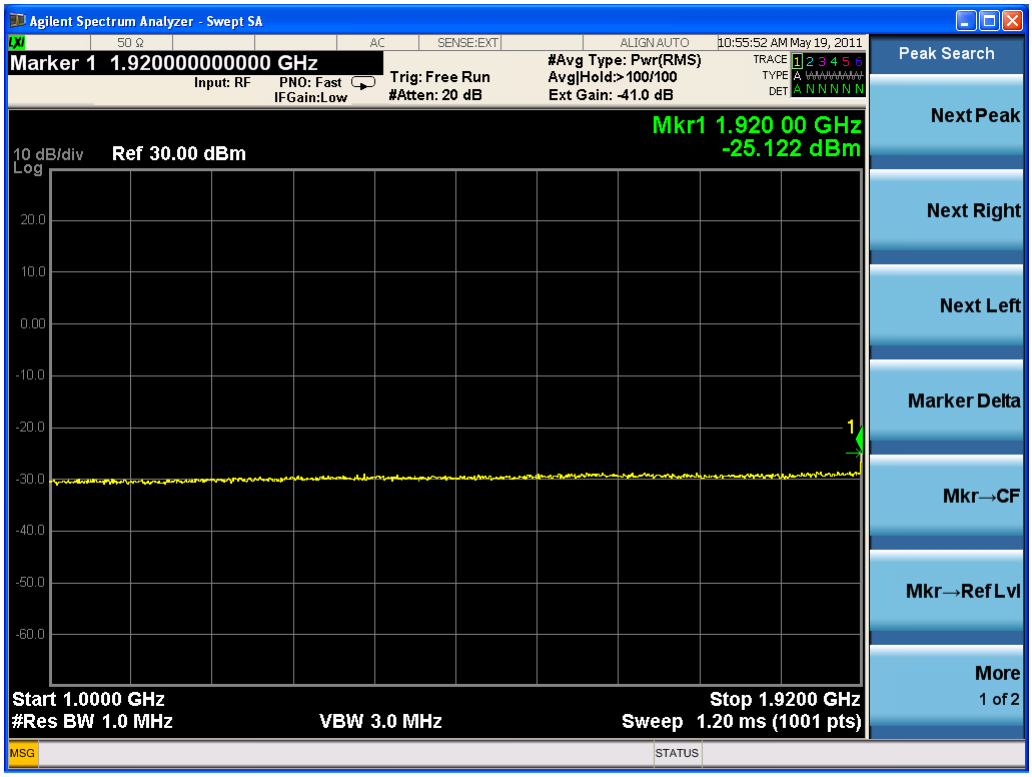
Test Data:

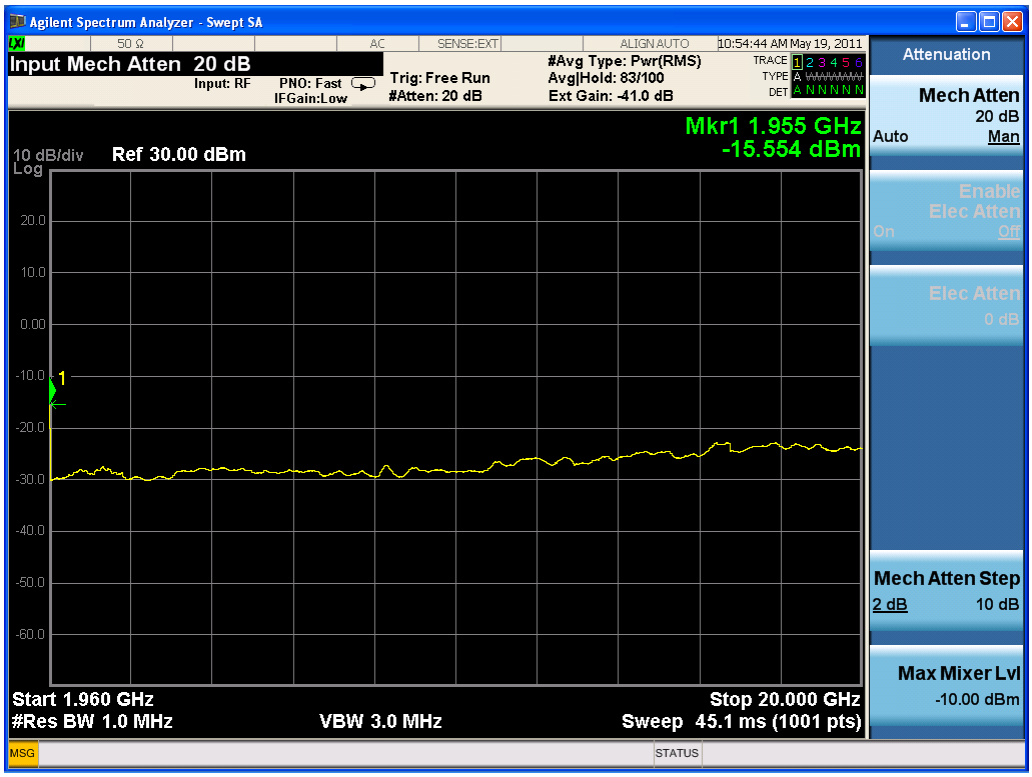
Four Carriers (working in bottom frequency)


Agilent Spectrum Analyzer - Swept SA
50 Ω
DC
SENSE:EXT
ALIGN AUTO
10:57:22 AM May 19, 2011
Marker 1 189.400000 kHz
Input: RF
PNO: Far
IFGain:Low
Trig: Free Run
#Atten: 22 dB
#Avg Type: Pwr(RMS)
Avg|Hold: 24/100
Ext Gain: -41.0 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET A N N N N N
Mkr1 189.40 kHz
-39.162 dBm
10 dB/div
Log
Ref 30.00 dBm
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
1
Start 150 kHz
#Res BW 10 kHz
VBW 30 kHz
Stop 10.000 MHz
Sweep 122 ms (1001 pts)
MSG
STATUS
DC Coupled
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

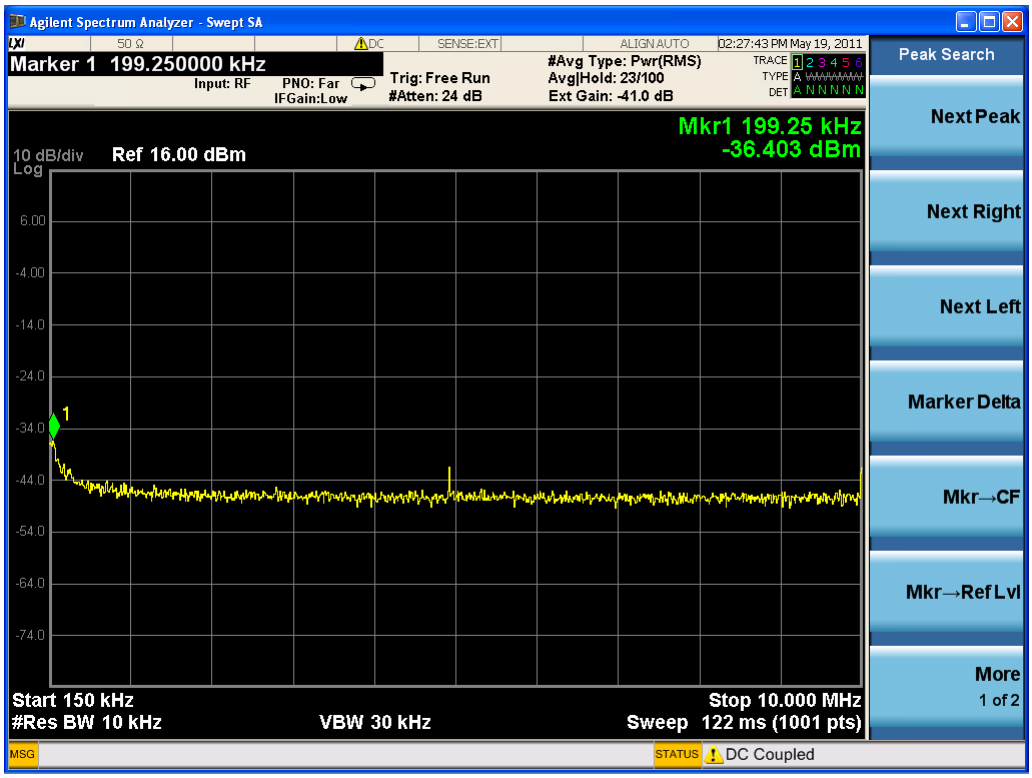

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:EXT
ALIGN AUTO
10:56:34 AM May 19, 2011
Marker 1 14.840000000 MHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 16 dB
#Avg Type: Pwr(RMS)
Avg|Hold:>100/100
Ext Gain: -41.0 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET A N N N N N
Mkr1 14.84 MHz
-32.077 dBm
10 dB/div
Log
Ref 30.00 dBm
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
1
Start 10.00 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 30.00 MHz
Sweep 1.00 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

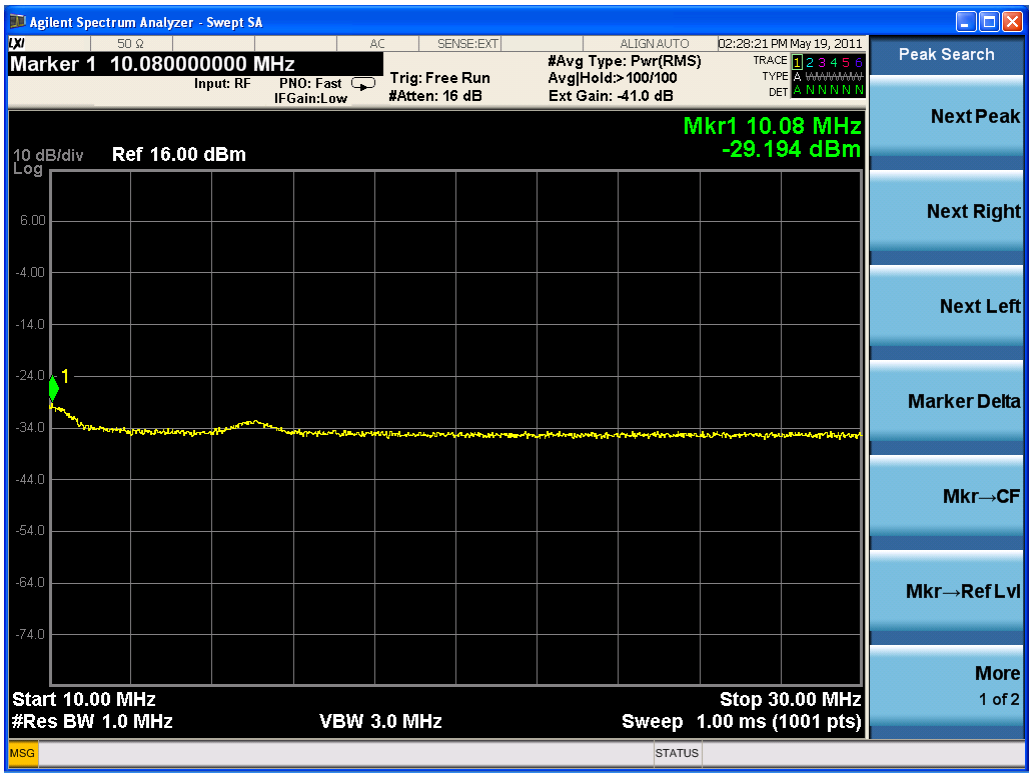

Agilent Spectrum Analyzer - Swept SA
Marker 1 949.560000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 16 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
10:56:17 AM May 19, 2011
Mkr1 949.56 MHz -33.035 dBm
10 dB/div Log
Ref 30.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.0000 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

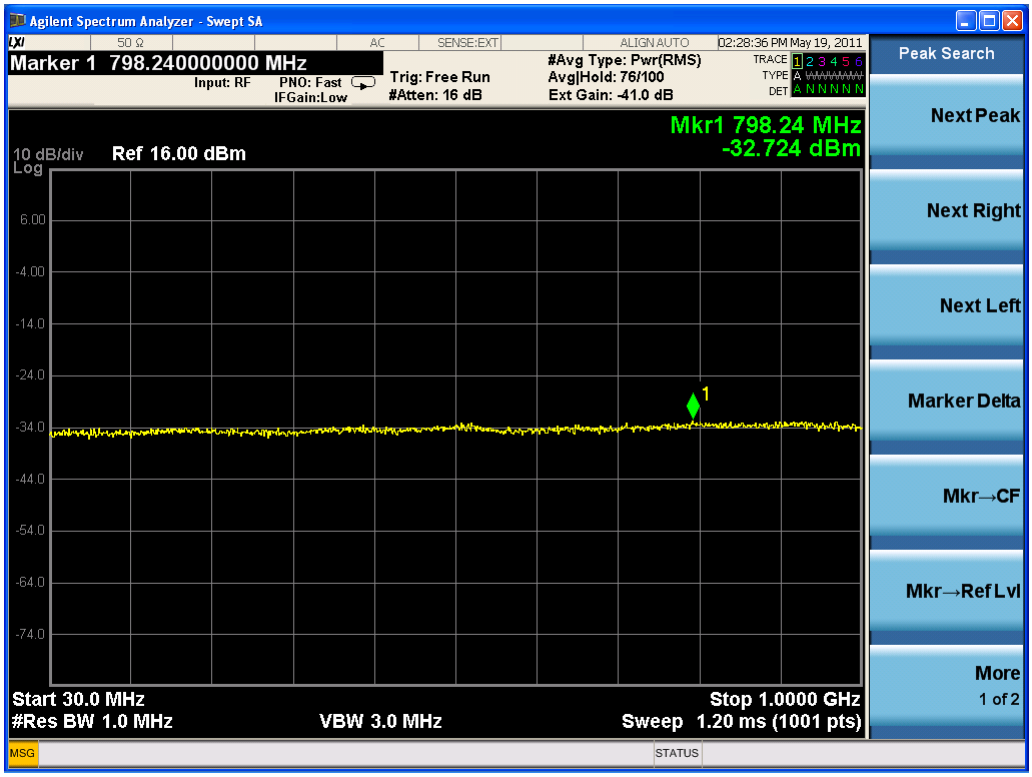

Agilent Spectrum Analyzer - Swept SA
Marker 1 1.920000000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 20 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
10:55:52 AM May 19, 2011
Mkr1 1.920 00 GHz -25.122 dBm
10 dB/div Log
Ref 30.00 dBm
Start 1.0000 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.9200 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

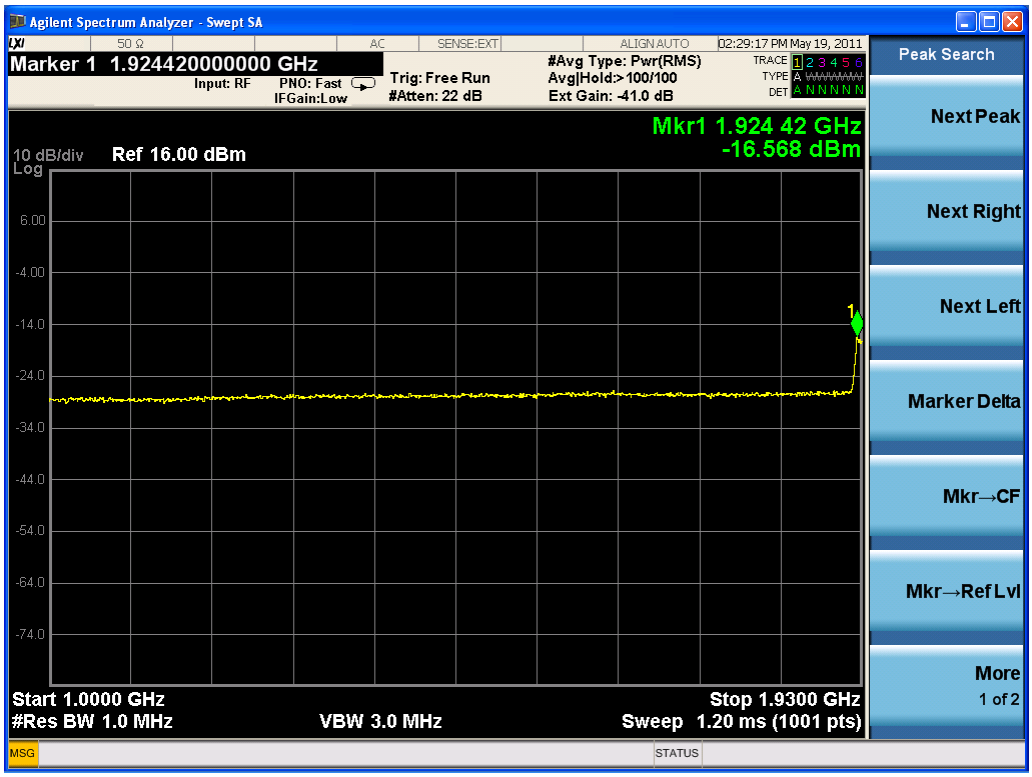

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:EXT
ALIGN AUTO
10:54:44 AM May 19, 2011
Input Mech Atten 20 dB
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: Pwr(RMS)
Avg|Hold: 83/100
Ext Gain: -41.0 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET A N N N N N
Mkr1 1.955 GHz
-15.554 dBm
10 dB/div
Log
Ref 30.00 dBm
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
1
Start 1.960 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 20.000 GHz
Sweep 45.1 ms (1001 pts)
Attenuation
Mech Atten
20 dB
Auto
Man
Enable
Elec Atten
On
Off
Elec Atten
0 dB
Mech Atten Step
2 dB
10 dB
Max Mixer Lvl
-10.00 dBm
MSG
STATUS

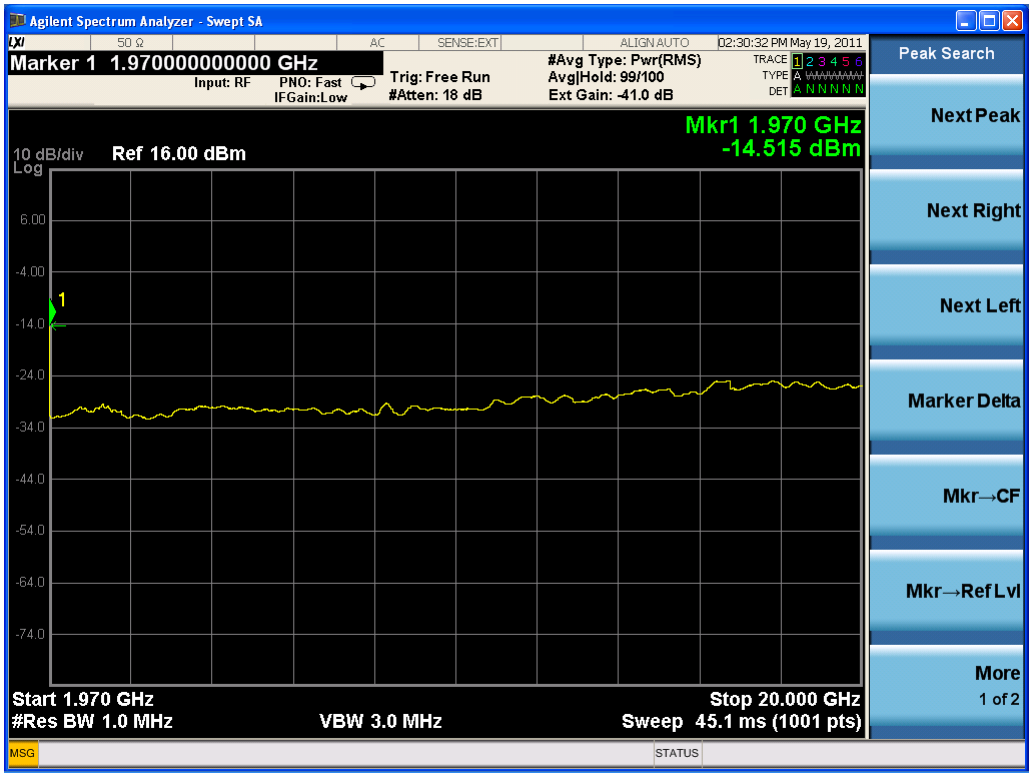
Four carriers (working in middle frequency)



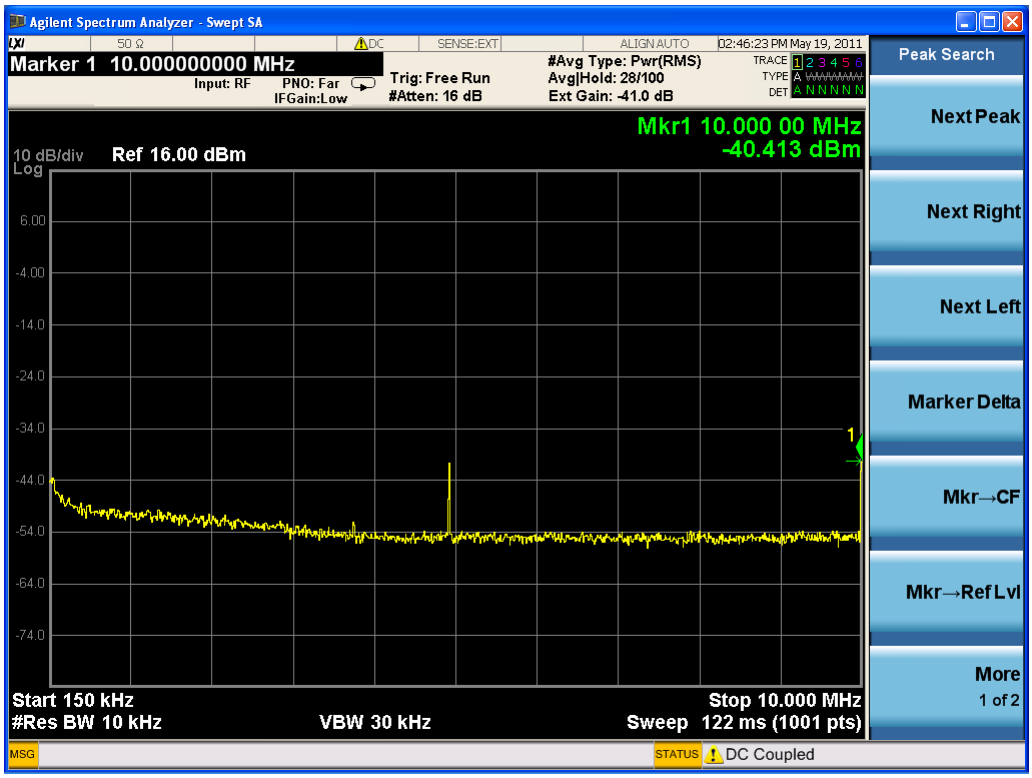

Agilent Spectrum Analyzer - Swept SA
Marker 1 10.080000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 16 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
02:28:21 PM May 19, 2011
Mkr1 10.08 MHz -29.194 dBm
10 dB/div Log
Ref 16.00 dBm
Start 10.00 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 30.00 MHz
Sweep 1.00 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

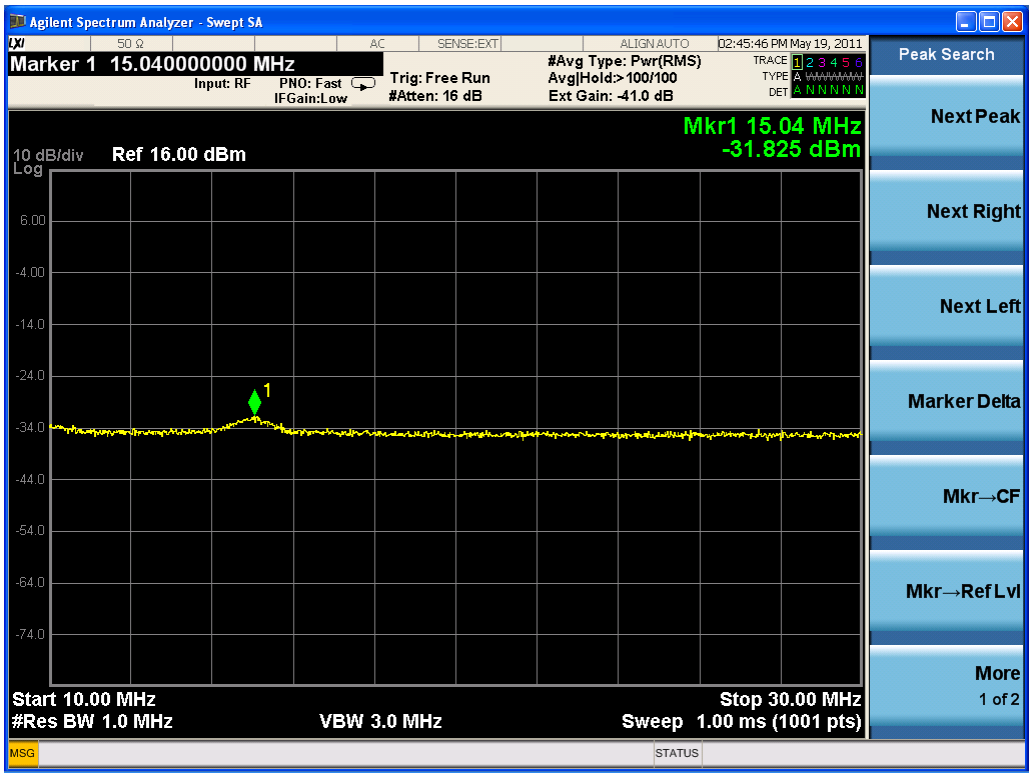

Agilent Spectrum Analyzer - Swept SA
Marker 1 798.240000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 16 dB
#Avg Type: Pwr(RMS) Avg|Hold: 76/100 Ext Gain: -41.0 dB
02:28:36 PM May 19, 2011
Mkr1 798.24 MHz -32.724 dBm
10 dB/div Log
Ref 16.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.0000 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

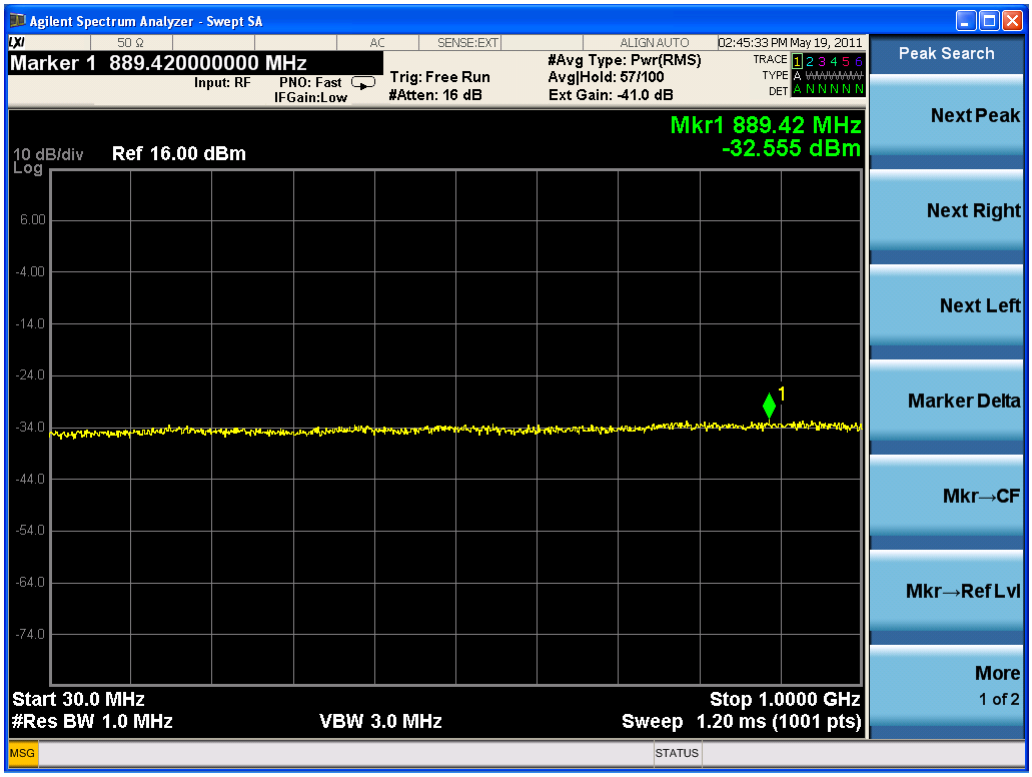

Agilent Spectrum Analyzer - Swept SA
Marker 1 1.924420000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 22 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
02:29:17 PM May 19, 2011
Mkr1 1.924 42 GHz -16.568 dBm
10 dB/div Log
Ref 16.00 dBm
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
Start 1.0000 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.9300 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

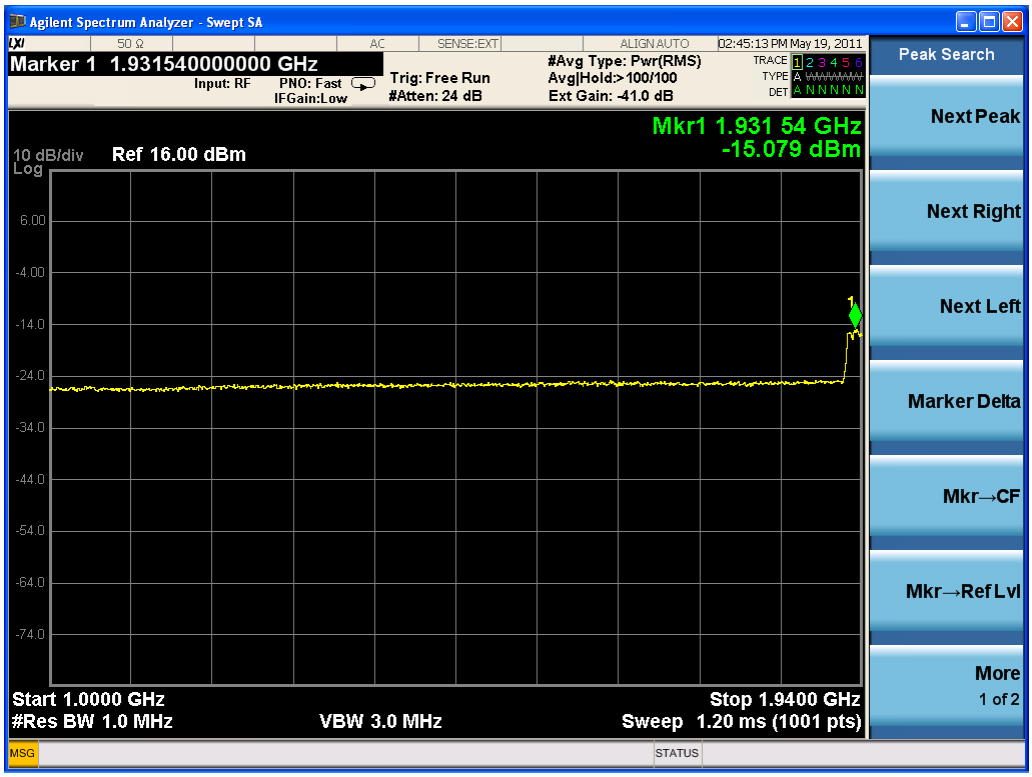

Agilent Spectrum Analyzer - Swept SA
Marker 1 1.970000000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 18 dB
#Avg Type: Pwr(RMS) Avg|Hold: 99/100 Ext Gain: -41.0 dB
02:30:32 PM May 19, 2011
Mkr1 1.970 GHz -14.515 dBm
10 dB/div Log
Ref 16.00 dBm
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
Start 1.970 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 20.000 GHz
Sweep 45.1 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

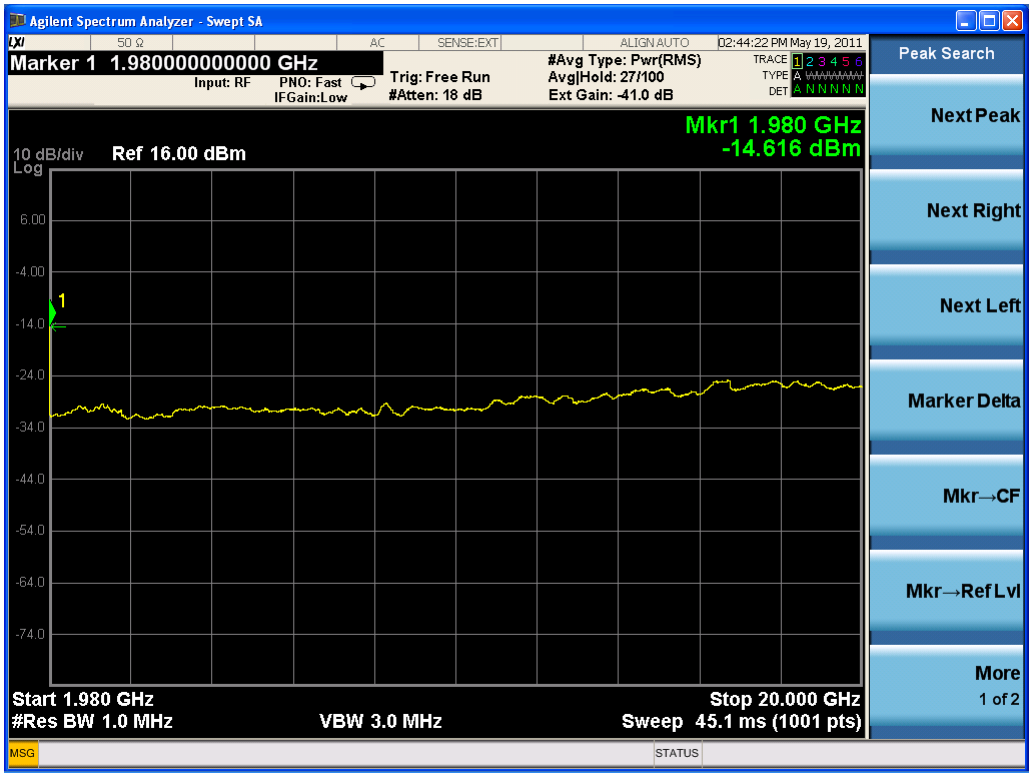
Four Carriers (working in top frequency)



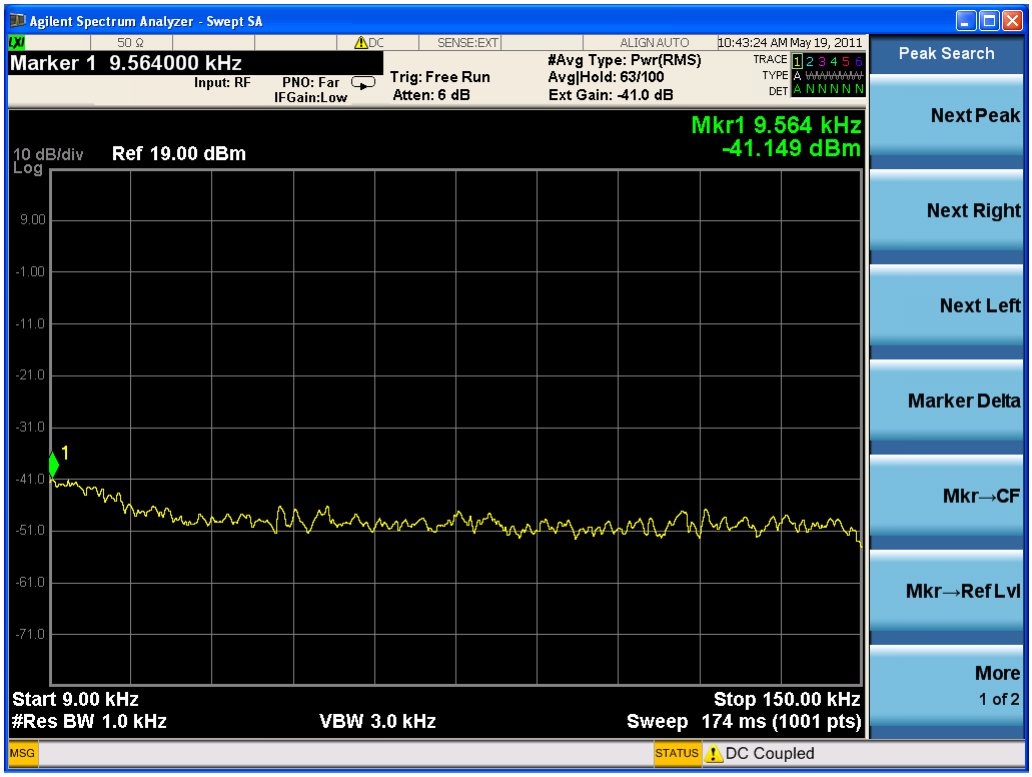

Agilent Spectrum Analyzer - Swept SA
Marker 1 15.040000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 16 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
02:45:46 PM May 19, 2011
Mkr1 15.04 MHz -31.825 dBm
10 dB/div Log
Ref 16.00 dBm
Start 10.00 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 30.00 MHz
Sweep 1.00 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

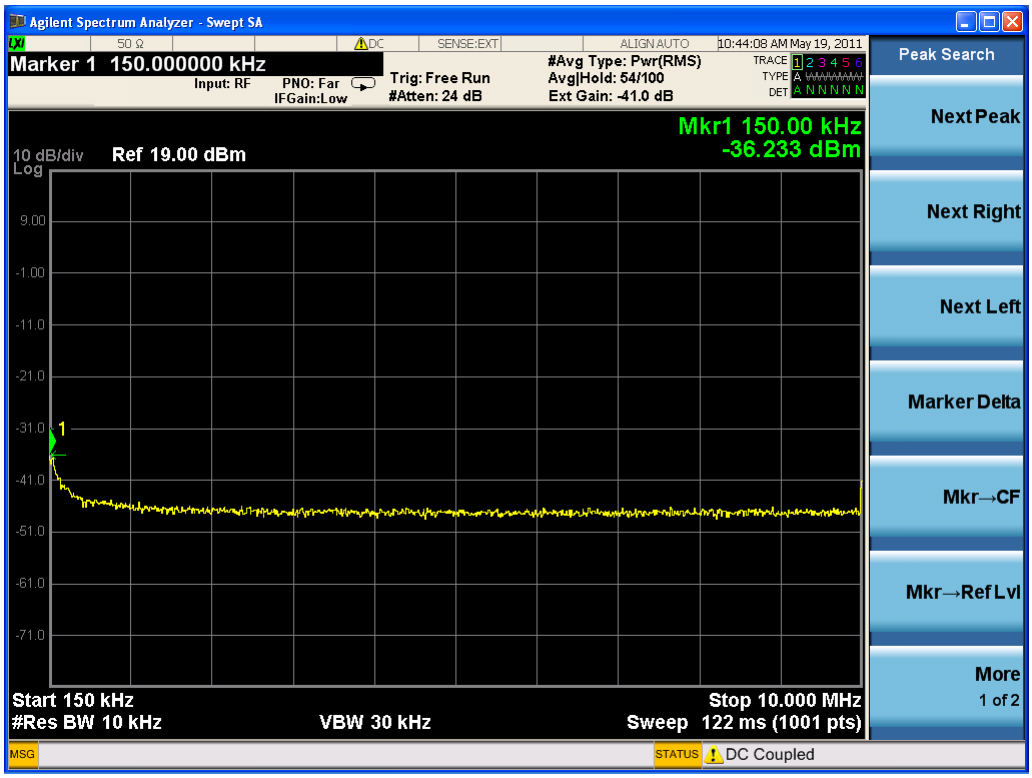

Agilent Spectrum Analyzer - Swept SA
Marker 1 889.420000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 16 dB
#Avg Type: Pwr(RMS) Avg|Hold: 57/100 Ext Gain: -41.0 dB
02:45:33 PM May 19, 2011
Mkr1 889.42 MHz -32.555 dBm
10 dB/div Log
Ref 16.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.0000 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

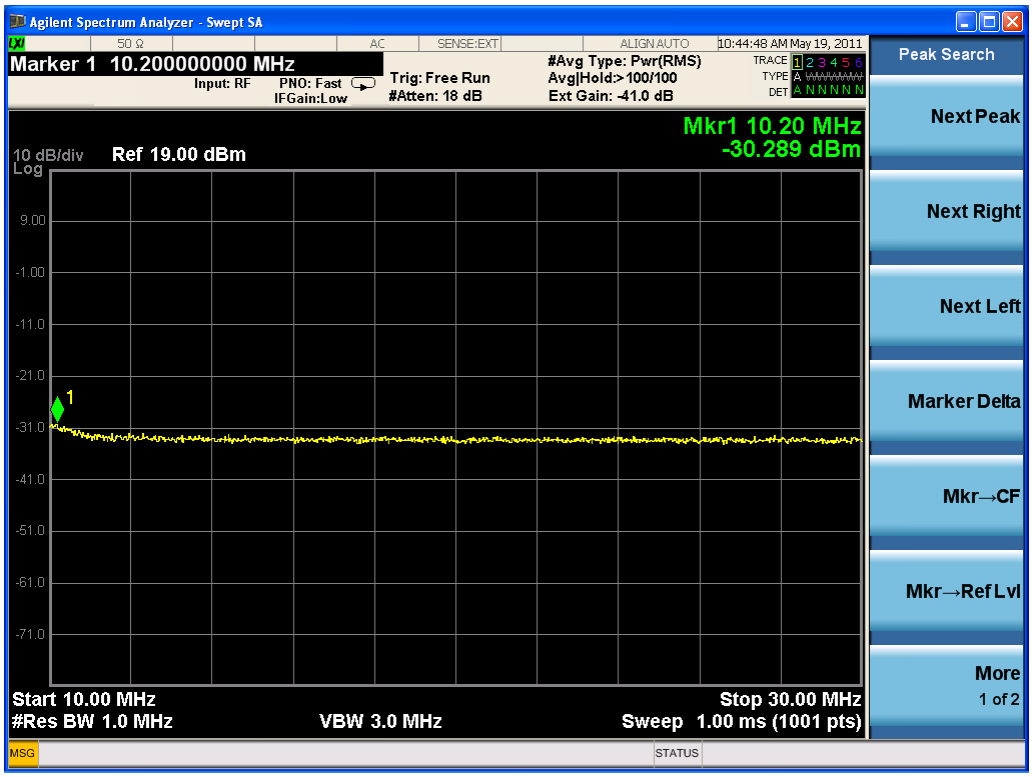

Agilent Spectrum Analyzer - Swept SA
Marker 1 1.931540000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 24 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
02:45:13 PM May 19, 2011
Mkr1 1.931 54 GHz -15.079 dBm
10 dB/div Log
Ref 16.00 dBm
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
Start 1.0000 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.9400 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

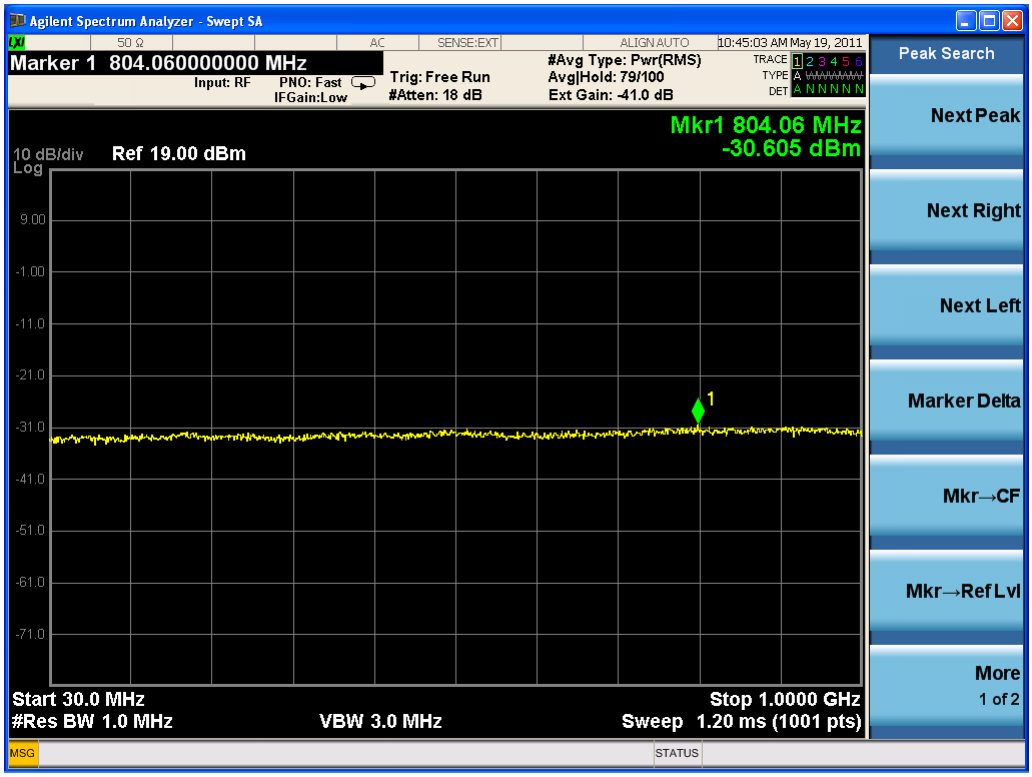

Agilent Spectrum Analyzer - Swept SA
Marker 1 1.980000000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 18 dB
#Avg Type: Pwr(RMS) Avg|Hold: 27/100 Ext Gain: -41.0 dB
02:44:22 PM May 19, 2011
Mkr1 1.980 GHz -14.616 dBm
10 dB/div Log
Ref 16.00 dBm
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
Start 1.980 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 20.000 GHz
Sweep 45.1 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

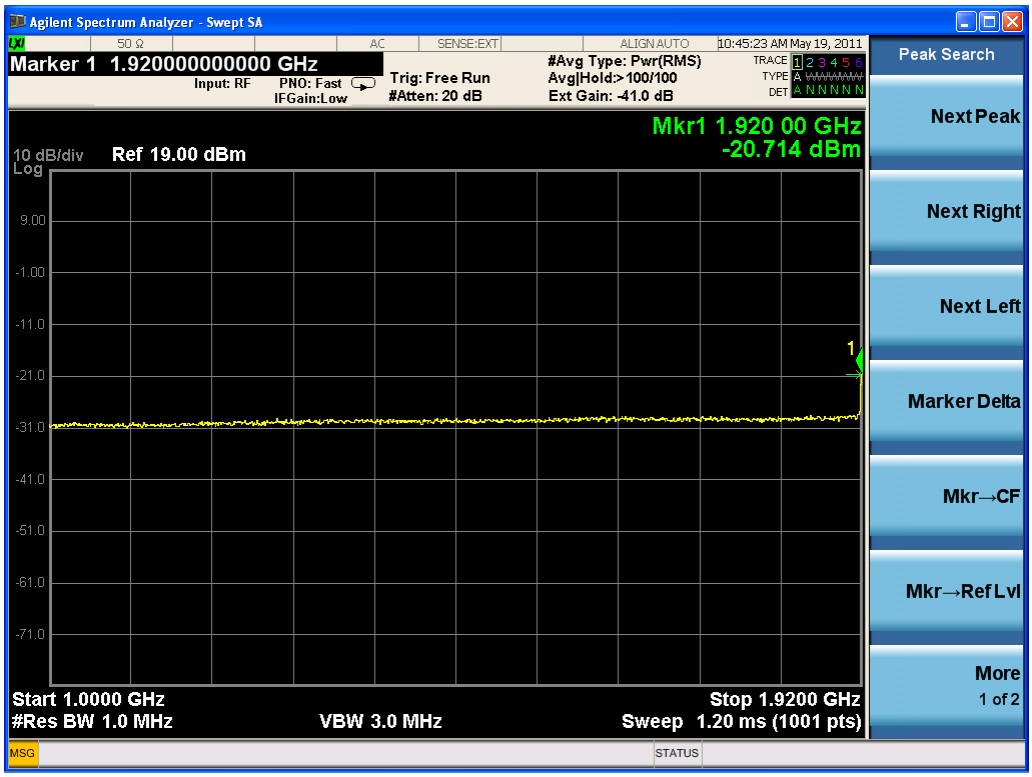
Three carriers (working in bottom frequency)

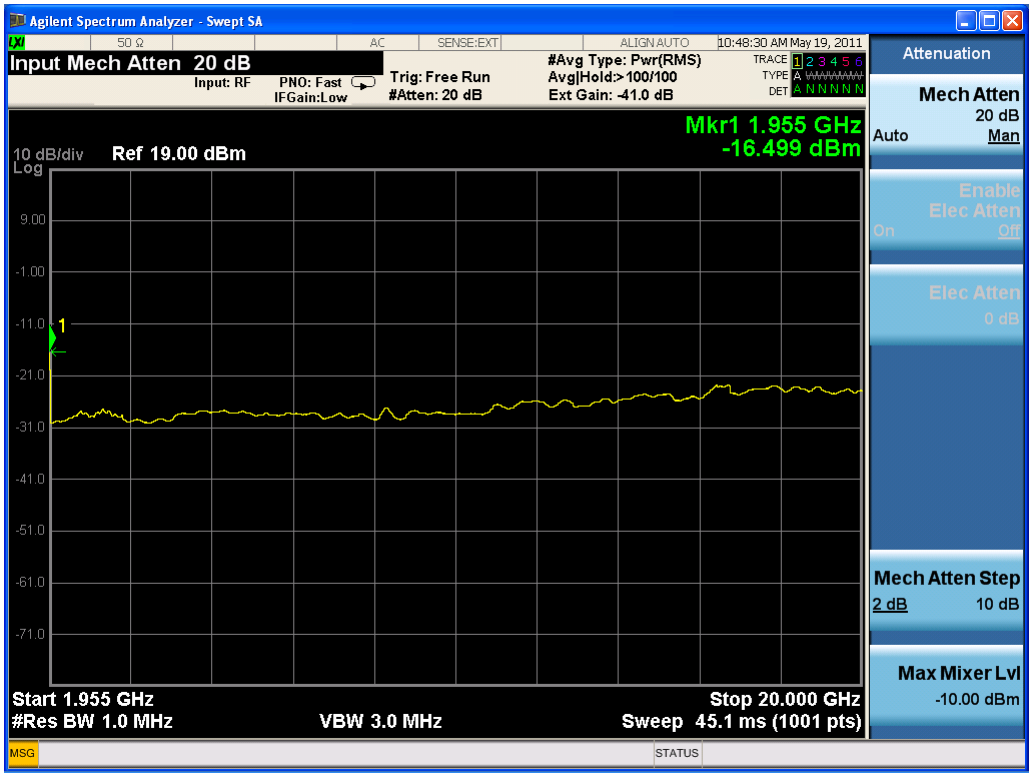




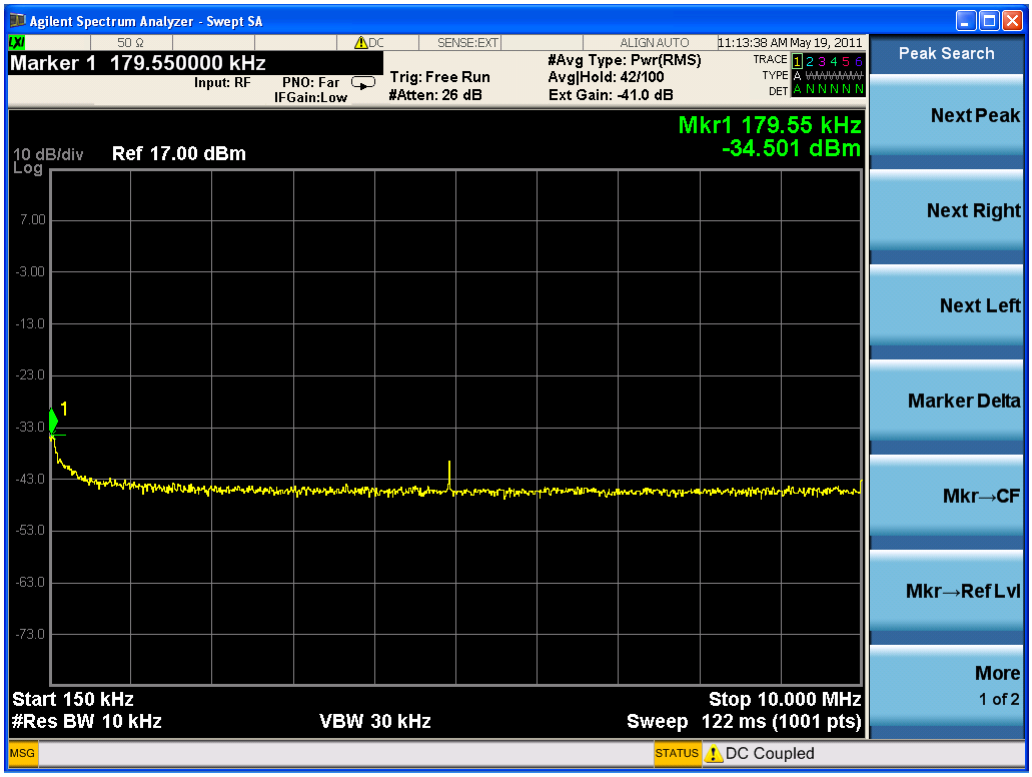

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:EXT
ALIGN AUTO
10:44:48 AM May 19, 2011
Marker 1 10.200000000 MHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 18 dB
#Avg Type: Pwr(RMS)
Avg|Hold:>100/100
Ext Gain: -41.0 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET A N N N N N
Mkr1 10.20 MHz
-30.289 dBm
10 dB/div
Log
Ref 19.00 dBm
9.00
-1.00
-11.0
-21.0
-31.0
-41.0
-51.0
-61.0
-71.0
1
Start 10.00 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 30.00 MHz
Sweep 1.00 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

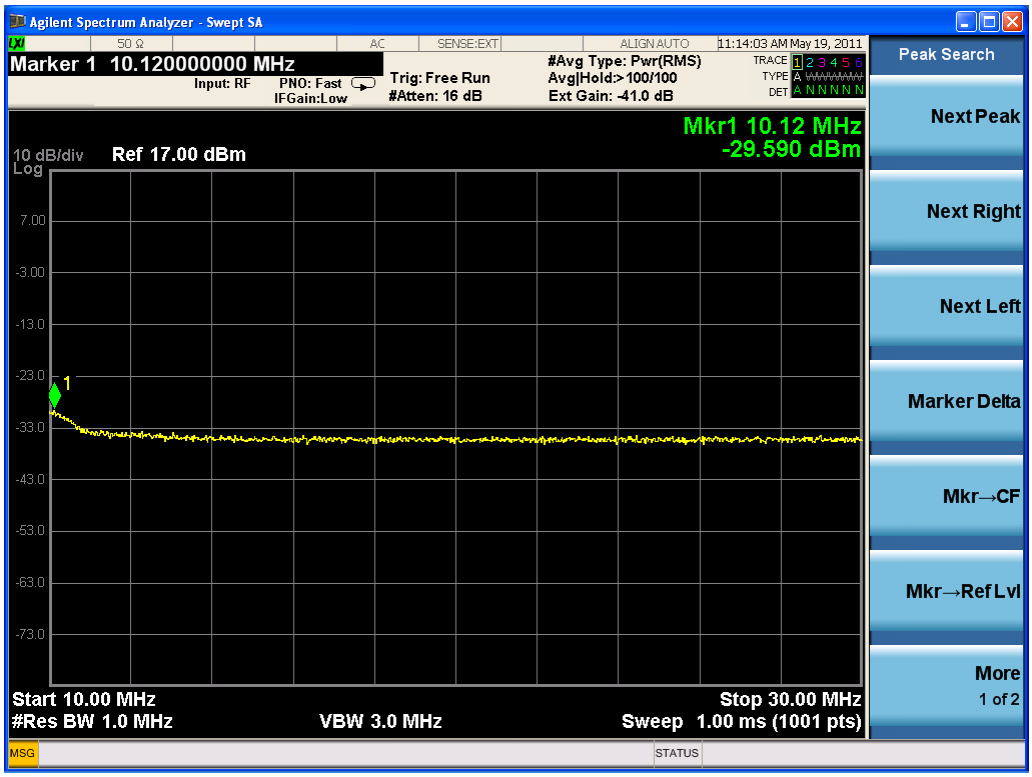

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:EXT
ALIGN AUTO
10:45:03 AM May 19, 2011
Marker 1 804.060000000 MHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 18 dB
#Avg Type: Pwr(RMS)
Avg|Hold: 79/100
Ext Gain: -41.0 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET A N N N N N
Mkr1 804.06 MHz
-30.605 dBm
10 dB/div
Log
Ref 19.00 dBm
9.00
-1.00
-11.0
-21.0
-31.0
-41.0
-51.0
-61.0
-71.0
1
Start 30.0 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.0000 GHz
Sweep 1.20 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

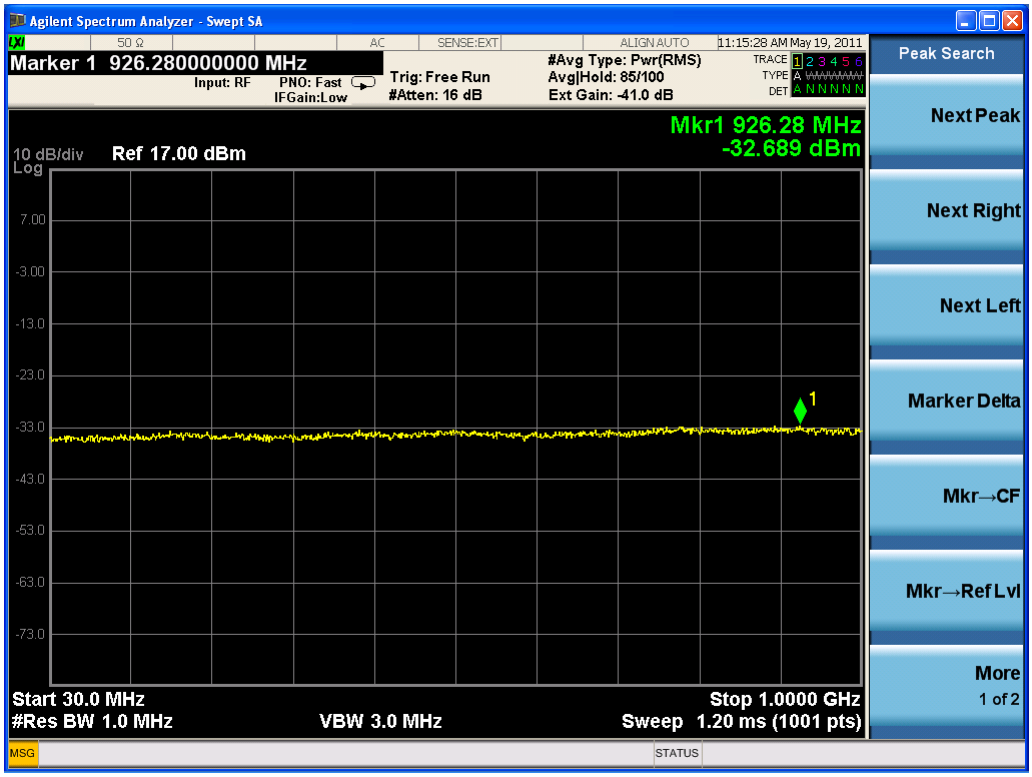

Agilent Spectrum Analyzer - Swept SA
Marker 1 1.920000000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 20 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
10:45:23 AM May 19, 2011
Mkr1 1.920 00 GHz -20.714 dBm
10 dB/div Log
Ref 19.00 dBm
Start 1.0000 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.9200 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

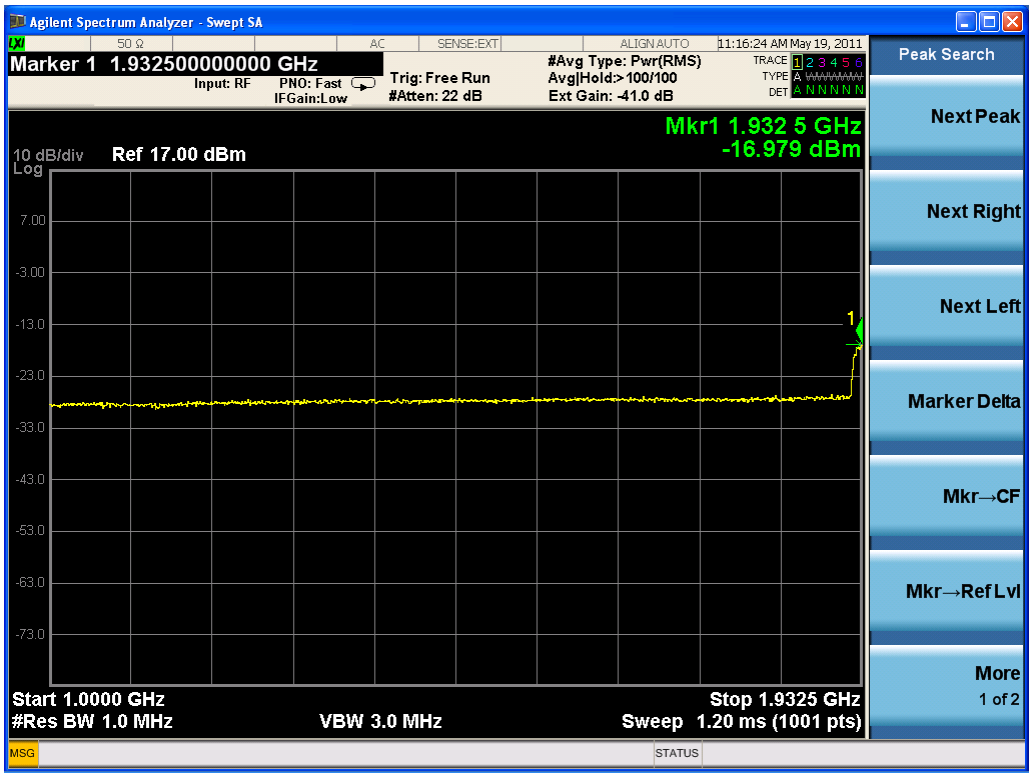

Agilent Spectrum Analyzer - Swept SA
Input Mech Atten 20 dB
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 20 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
10:48:30 AM May 19, 2011
Mkr1 1.955 GHz -16.499 dBm
10 dB/div Log
Ref 19.00 dBm
Start 1.955 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 20.000 GHz
Sweep 45.1 ms (1001 pts)
Attenuation
Mech Atten 20 dB
Auto Man
Enable Elec Atten
On Off
Elec Atten 0 dB
Mech Atten Step
2 dB 10 dB
Max Mixer Lvl -10.00 dBm

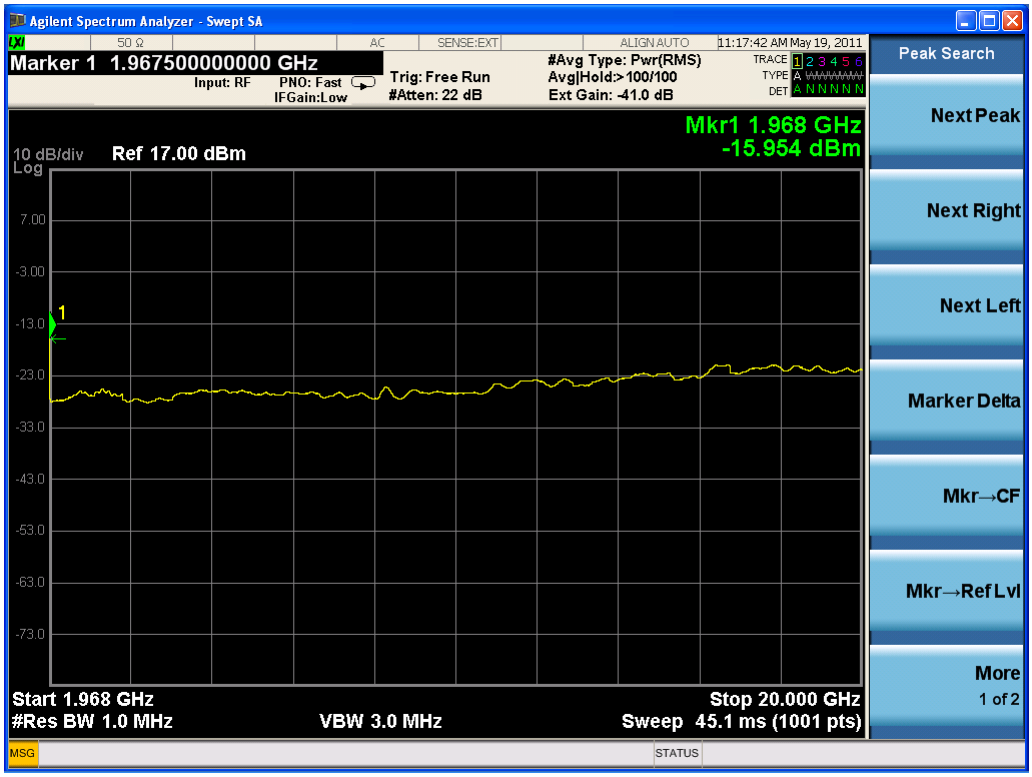
Three carriers (working in middle frequency)



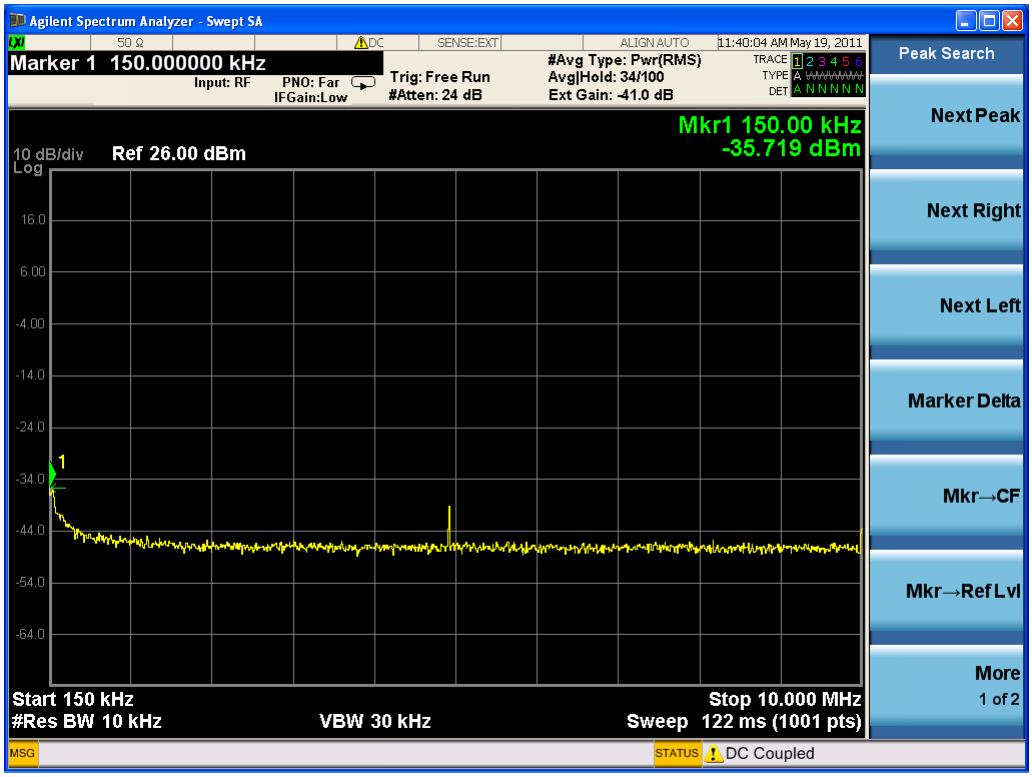

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:EXT
ALIGN AUTO
11:14:03 AM May 19, 2011
Marker 1 10.120000000 MHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 16 dB
#Avg Type: Pwr(RMS)
Avg|Hold:>100/100
Ext Gain: -41.0 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET A N N N N N
Mkr1 10.12 MHz
-29.590 dBm
10 dB/div
Log
Ref 17.00 dBm
7.00
-3.00
-13.0
-23.0
-33.0
-43.0
-53.0
-63.0
-73.0
1
Start 10.00 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 30.00 MHz
Sweep 1.00 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

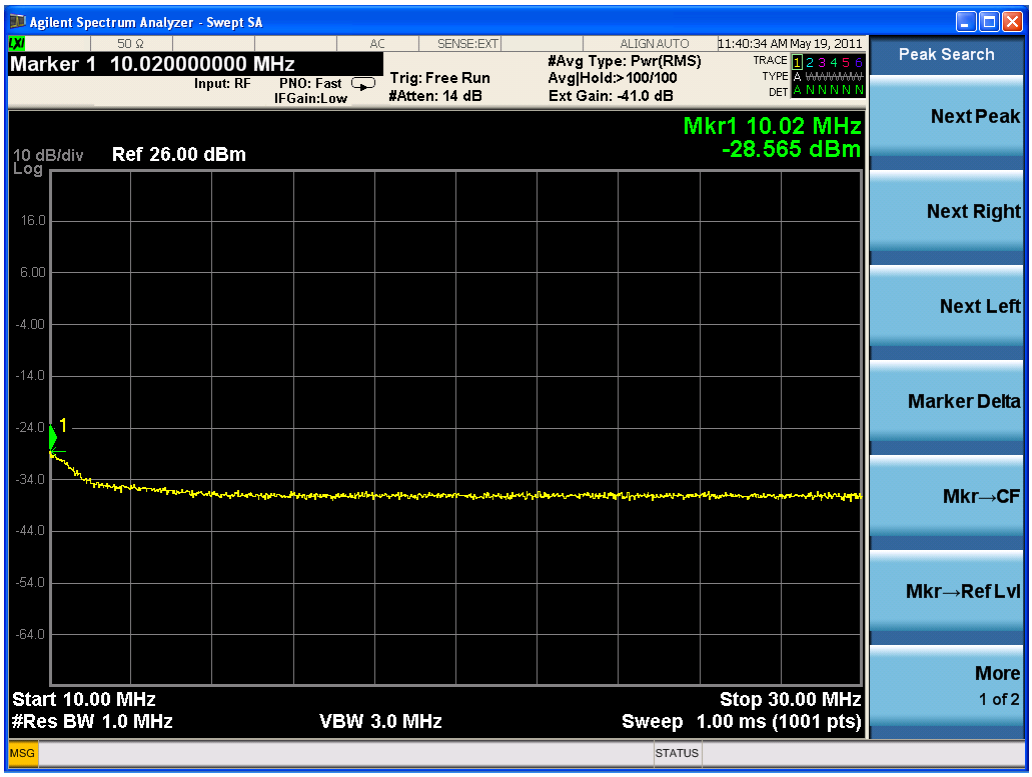

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:EXT
ALIGN AUTO
11:15:28 AM May 19, 2011
Marker 1 926.280000000 MHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 16 dB
#Avg Type: Pwr(RMS)
Avg|Hold: 85/100
Ext Gain: -41.0 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET A N N N N N
Mkr1 926.28 MHz
-32.689 dBm
10 dB/div
Log
Ref 17.00 dBm
7.00
-3.00
-13.0
-23.0
-33.0
-43.0
-53.0
-63.0
-73.0
1
Start 30.0 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.0000 GHz
Sweep 1.20 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

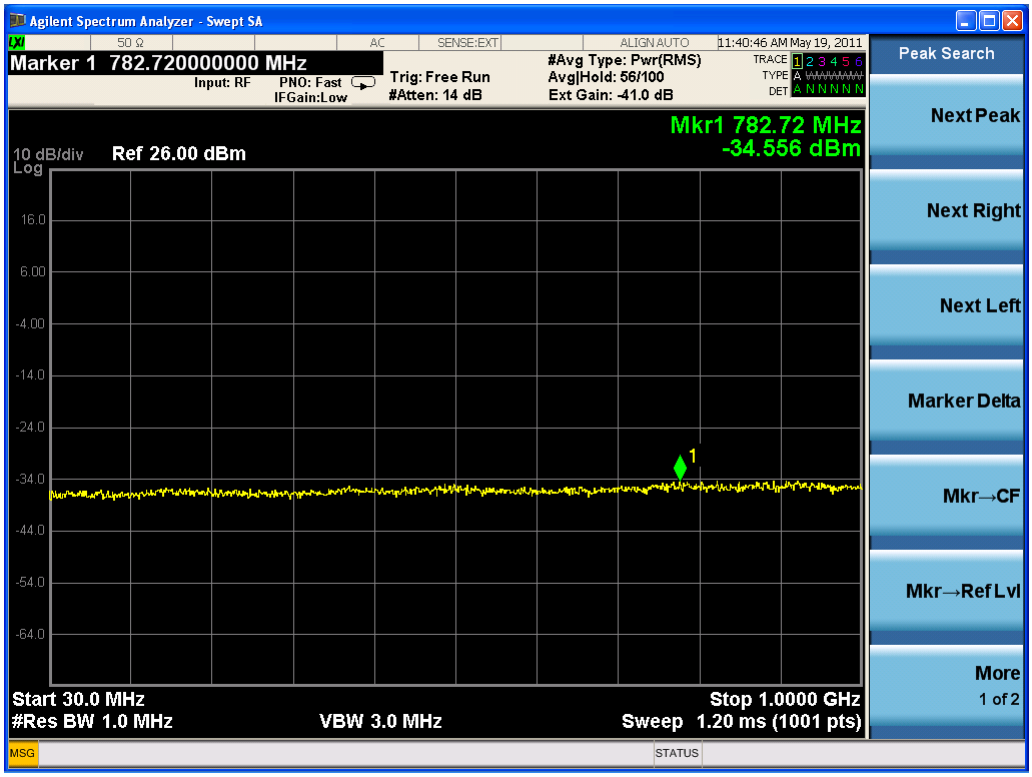

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:EXT
ALIGN AUTO
11:16:24 AM May 19, 2011
Marker 1 1.932500000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 22 dB
#Avg Type: Pwr(RMS)
Avg|Hold:>100/100
Ext Gain: -41.0 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET A N N N N N
Mkr1 1.932 5 GHz
-16.979 dBm
10 dB/div
Log
Ref 17.00 dBm
7.00
-3.00
-13.0
-23.0
-33.0
-43.0
-53.0
-63.0
-73.0
Start 1.0000 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.9325 GHz
Sweep 1.20 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

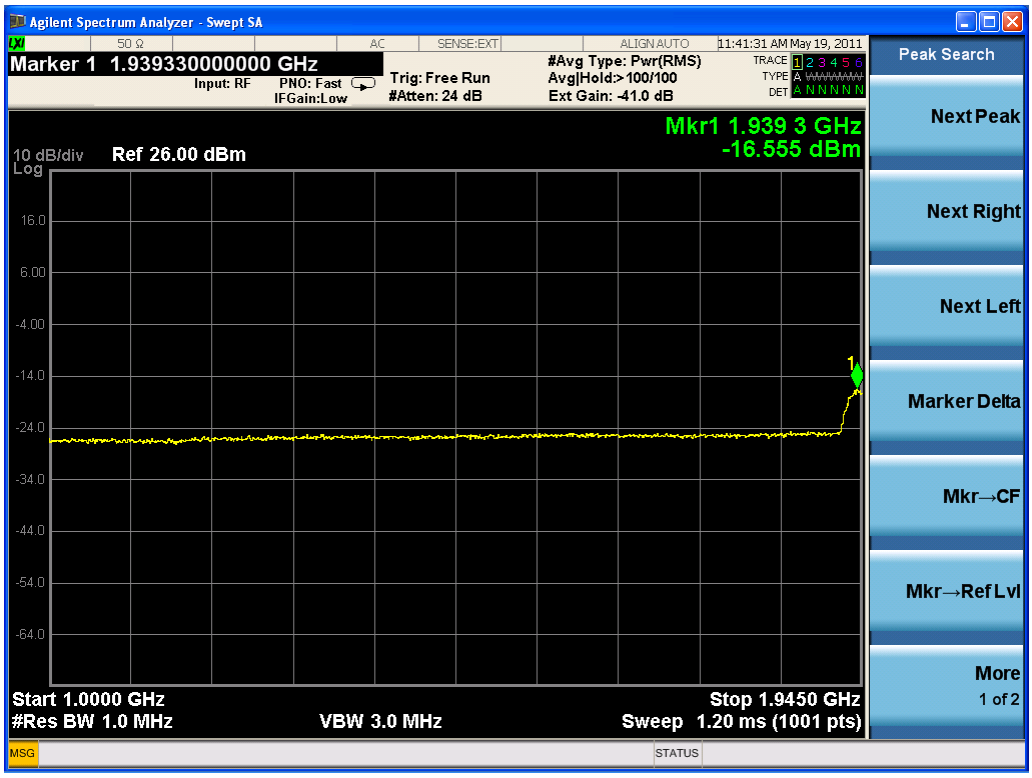

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:EXT
ALIGN AUTO
11:17:42 AM May 19, 2011
Marker 1 1.967500000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 22 dB
#Avg Type: Pwr(RMS)
Avg|Hold:>100/100
Ext Gain: -41.0 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET A N N N N N
Mkr1 1.968 GHz
-15.954 dBm
10 dB/div
Log
Ref 17.00 dBm
7.00
-3.00
-13.0
-23.0
-33.0
-43.0
-53.0
-63.0
-73.0
Start 1.968 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 20.000 GHz
Sweep 45.1 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

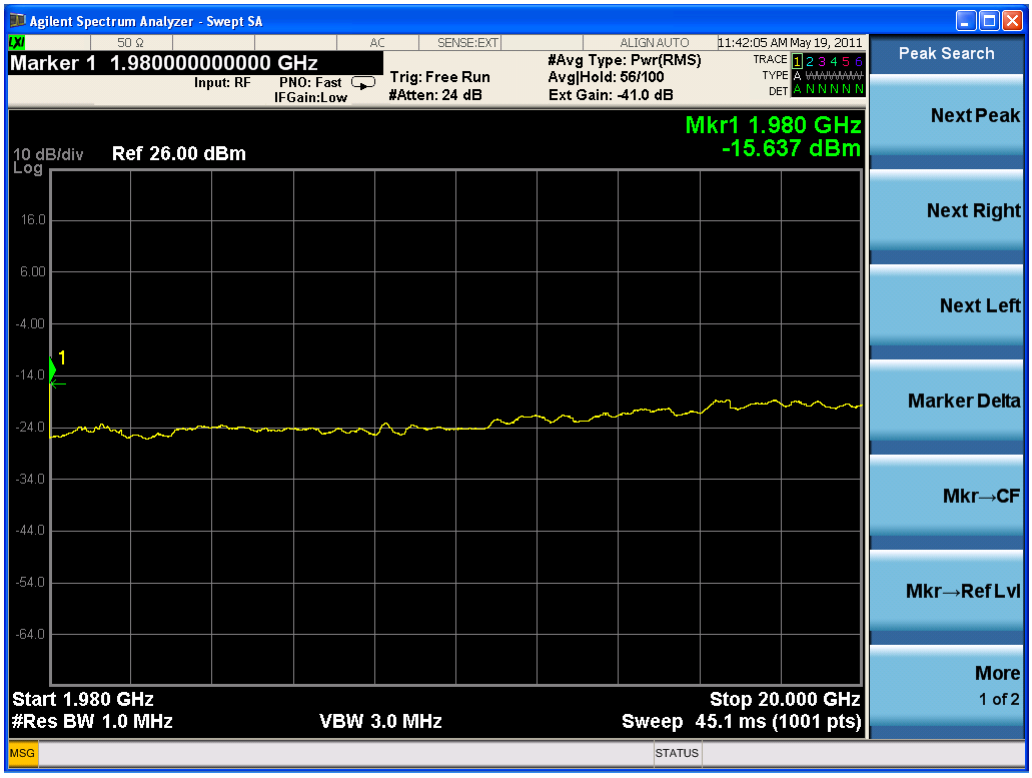
Three carriers (working in top frequency)



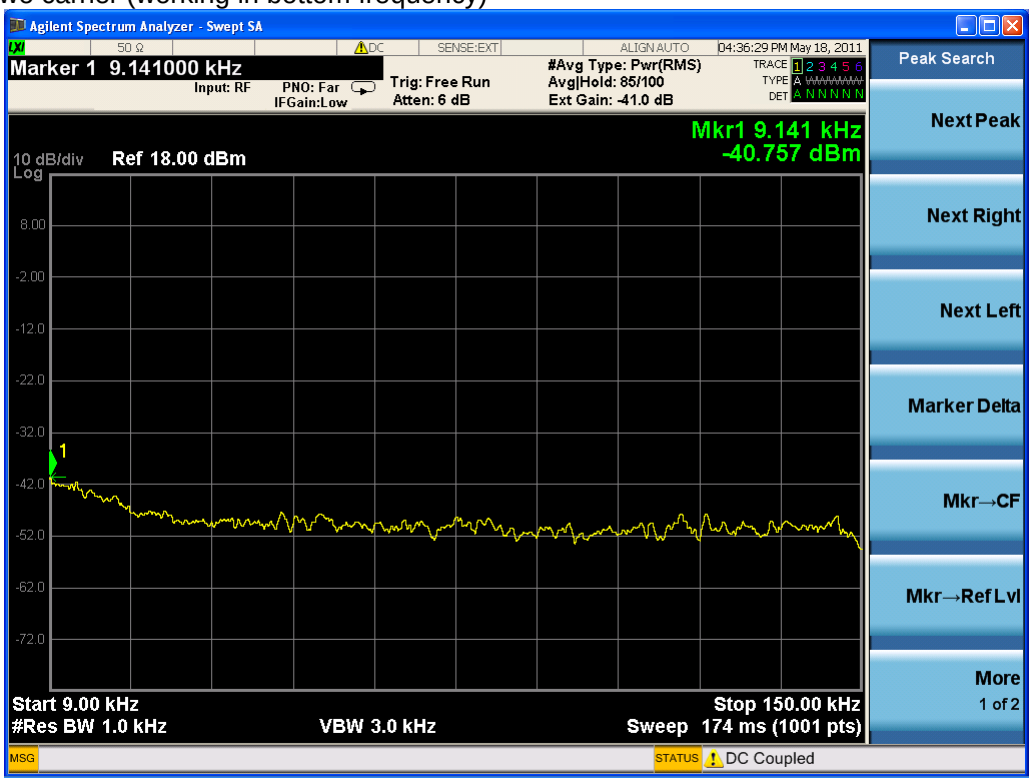

Agilent Spectrum Analyzer - Swept SA
Marker 1 10.020000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 14 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
11:40:34 AM May 19, 2011
Mkr1 10.02 MHz -28.565 dBm
10 dB/div Log
Ref 26.00 dBm
16.0
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
Start 10.00 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 30.00 MHz
Sweep 1.00 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

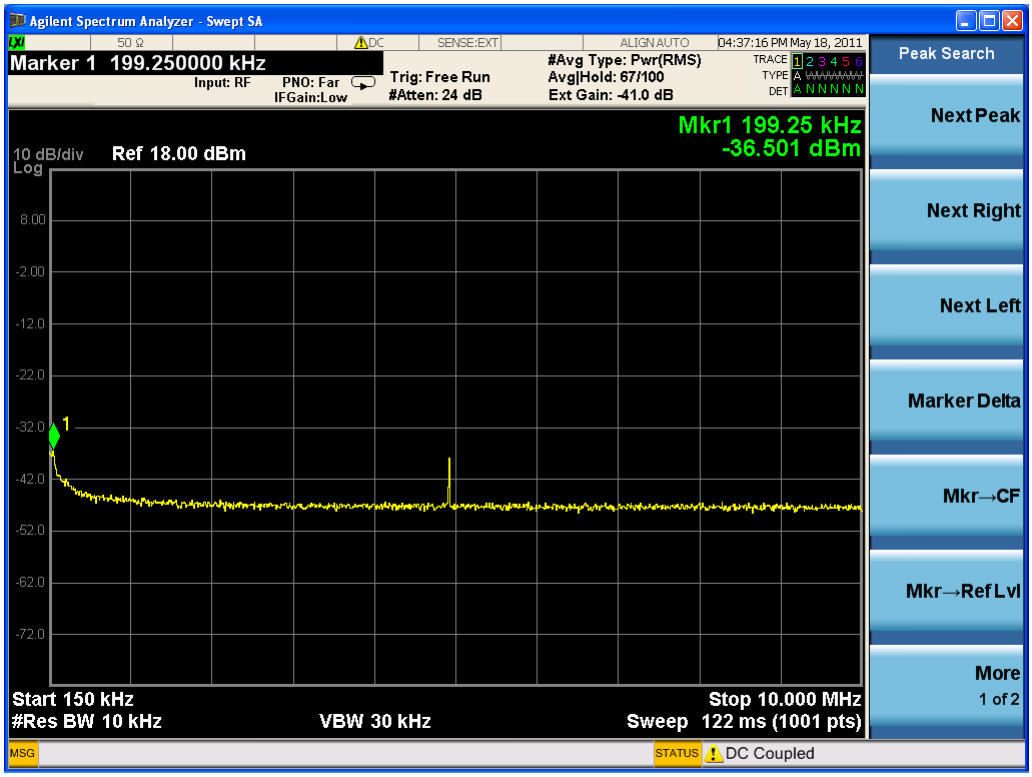

Agilent Spectrum Analyzer - Swept SA
Marker 1 782.720000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 14 dB
#Avg Type: Pwr(RMS) Avg|Hold: 56/100 Ext Gain: -41.0 dB
11:40:46 AM May 19, 2011
Mkr1 782.72 MHz -34.556 dBm
10 dB/div Log
Ref 26.00 dBm
16.0
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
Start 30.0 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.0000 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

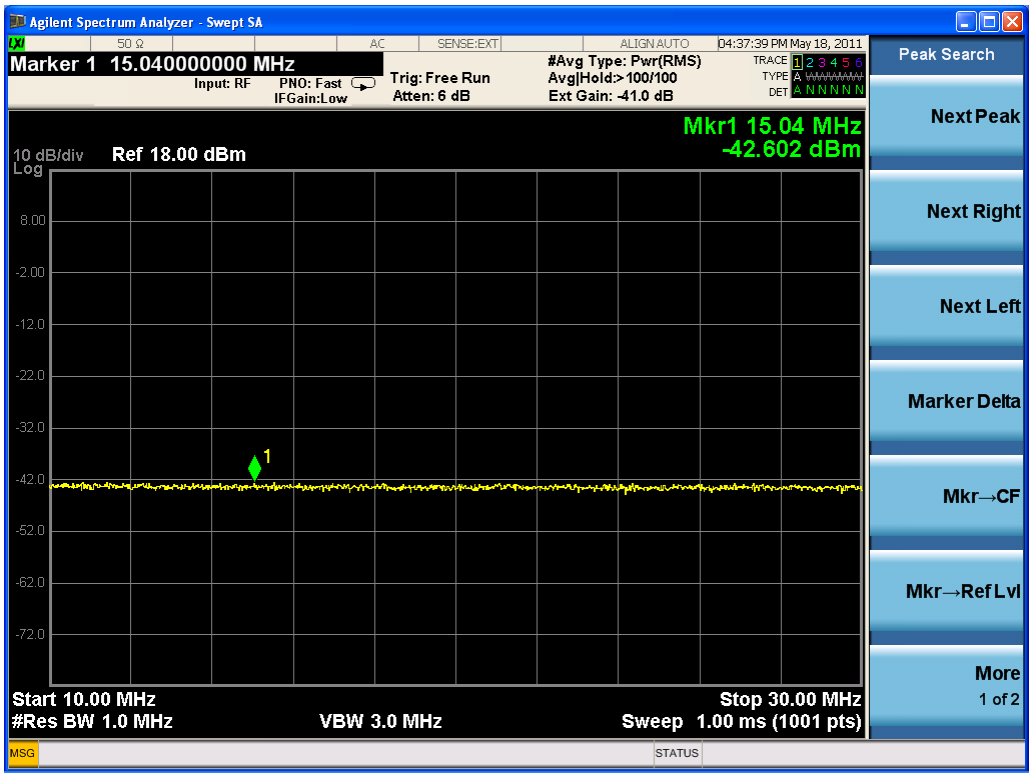

Agilent Spectrum Analyzer - Swept SA
Marker 1 1.939330000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 24 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
11:41:31 AM May 19, 2011
Mkr1 1.939 3 GHz -16.555 dBm
10 dB/div Log
Ref 26.00 dBm
16.0
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
Start 1.0000 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.9450 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

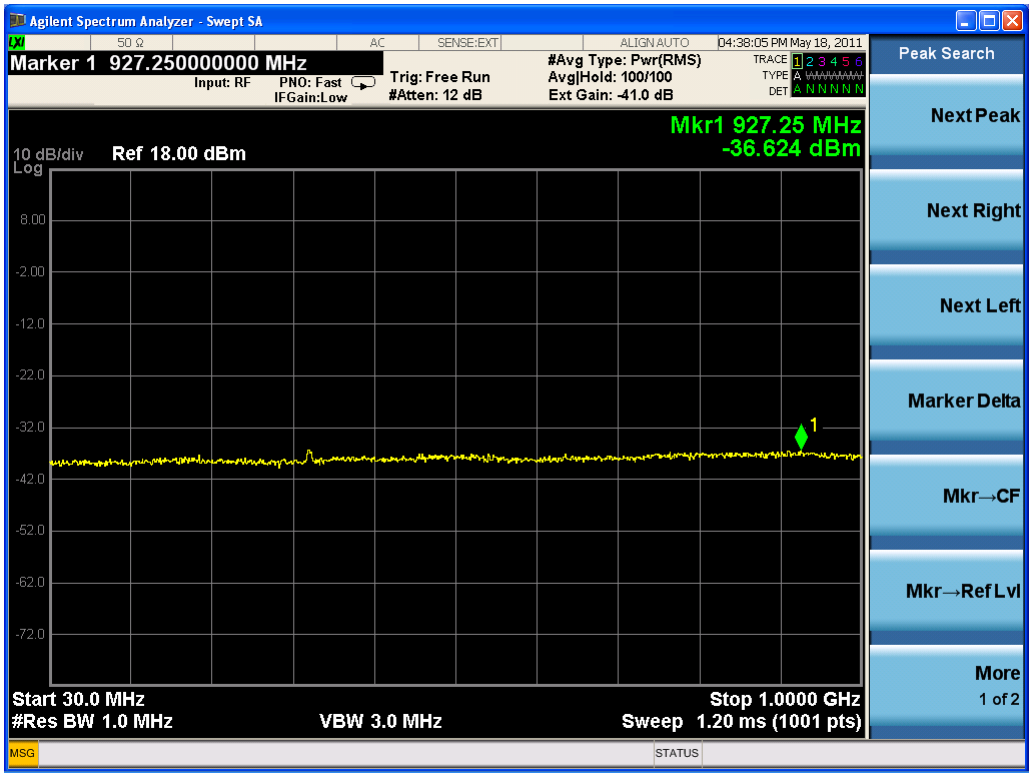

Agilent Spectrum Analyzer - Swept SA
Marker 1 1.980000000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 24 dB
#Avg Type: Pwr(RMS) Avg|Hold: 56/100 Ext Gain: -41.0 dB
11:42:05 AM May 19, 2011
Mkr1 1.980 GHz -15.637 dBm
10 dB/div Log
Ref 26.00 dBm
16.0
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
Start 1.980 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 20.000 GHz
Sweep 45.1 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

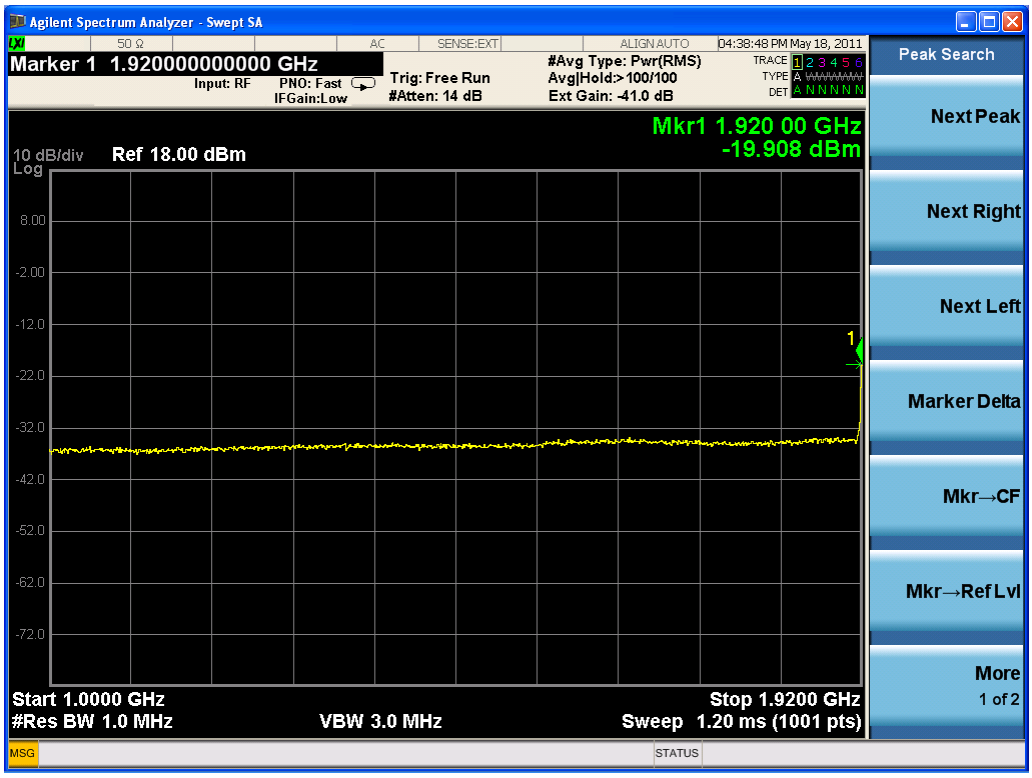
Two carrier (working in bottom frequency)

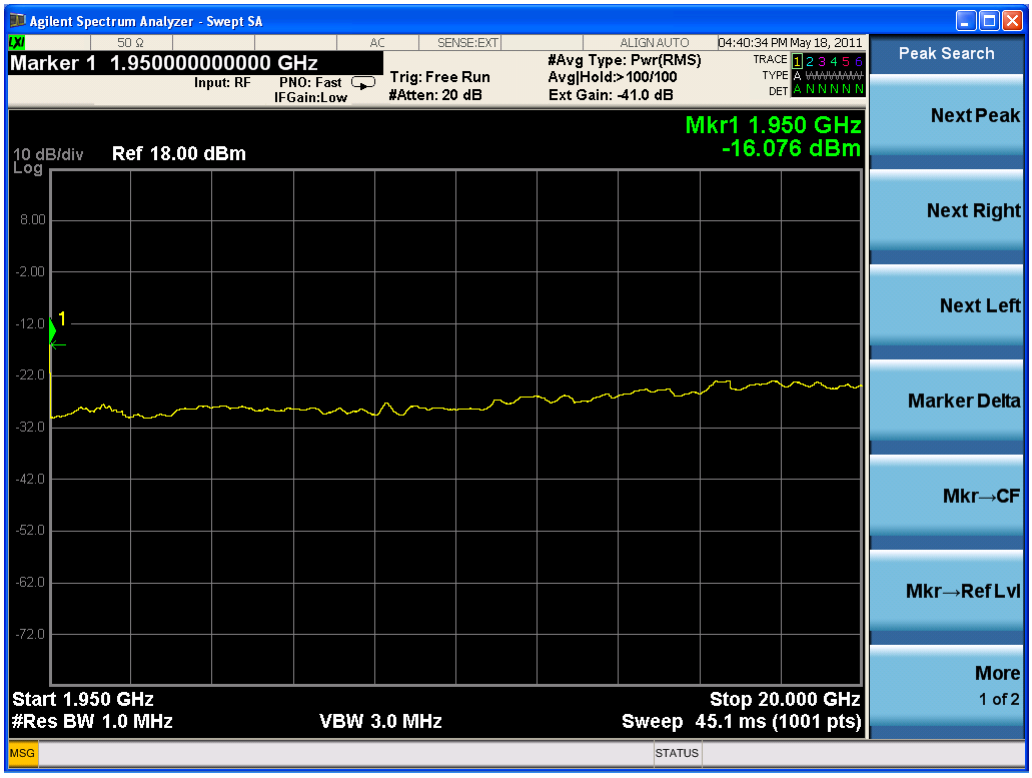




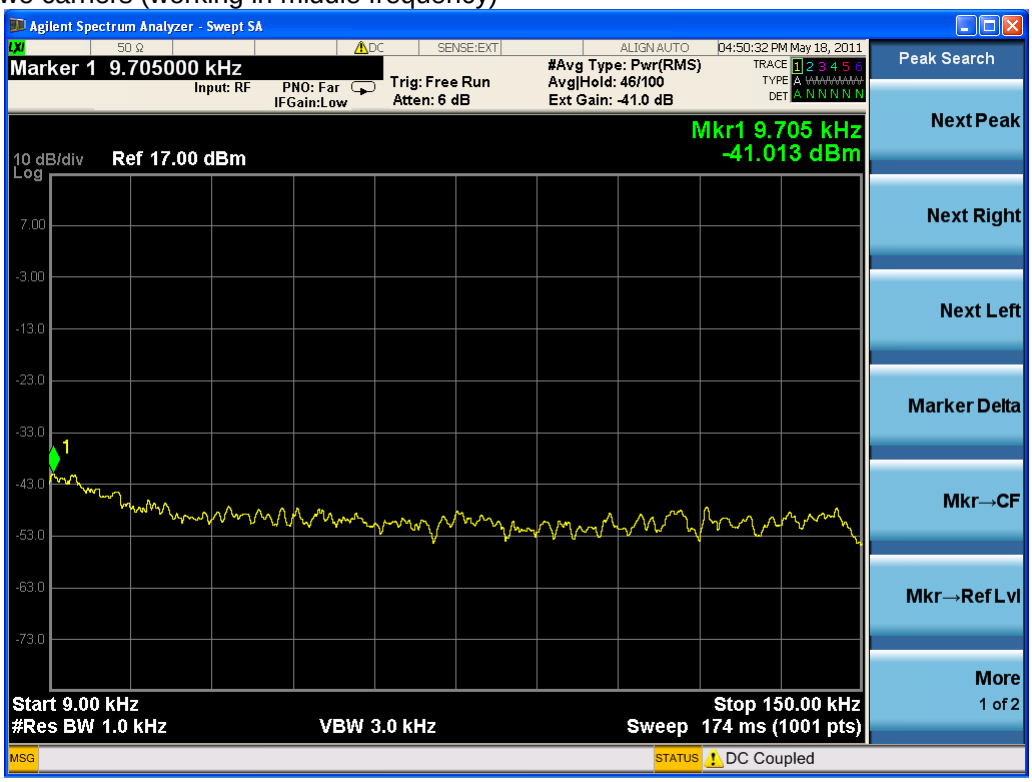

Agilent Spectrum Analyzer - Swept SA
Marker 1 15.040000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run Atten: 6 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
04:37:39 PM May 18, 2011
Mkr1 15.04 MHz -42.602 dBm
10 dB/div Log
Ref 18.00 dBm
Start 10.00 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 30.00 MHz
Sweep 1.00 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

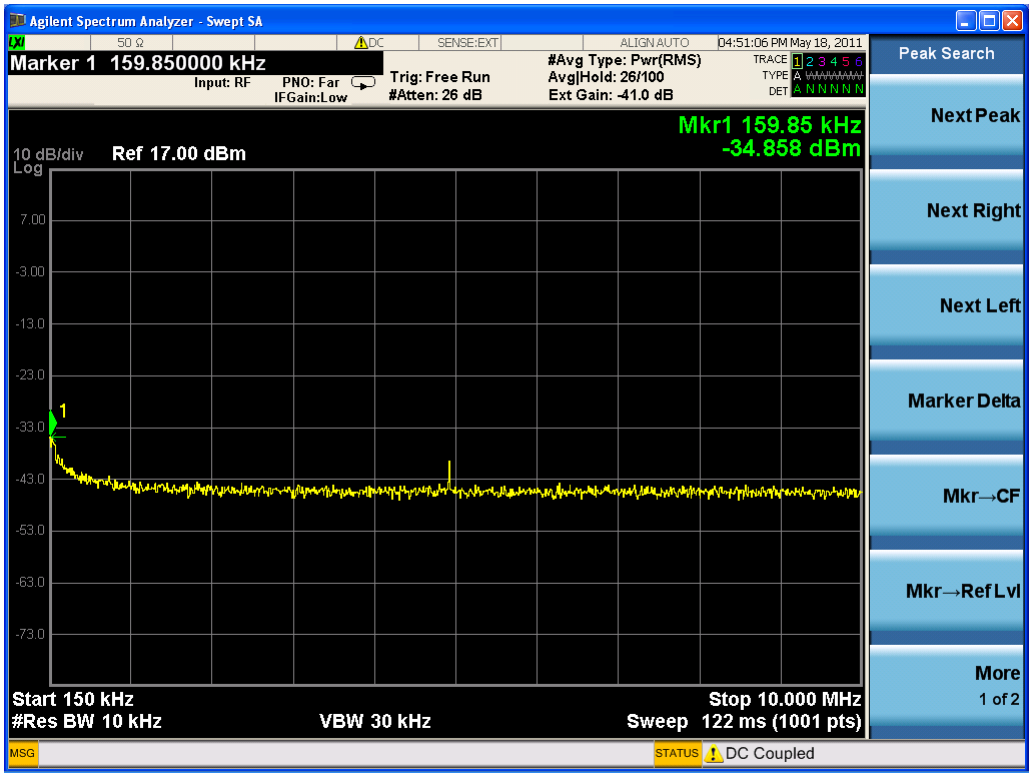

Agilent Spectrum Analyzer - Swept SA
Marker 1 927.250000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 12 dB
#Avg Type: Pwr(RMS) Avg|Hold: 100/100 Ext Gain: -41.0 dB
04:38:05 PM May 18, 2011
Mkr1 927.25 MHz -36.624 dBm
10 dB/div Log
Ref 18.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.0000 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

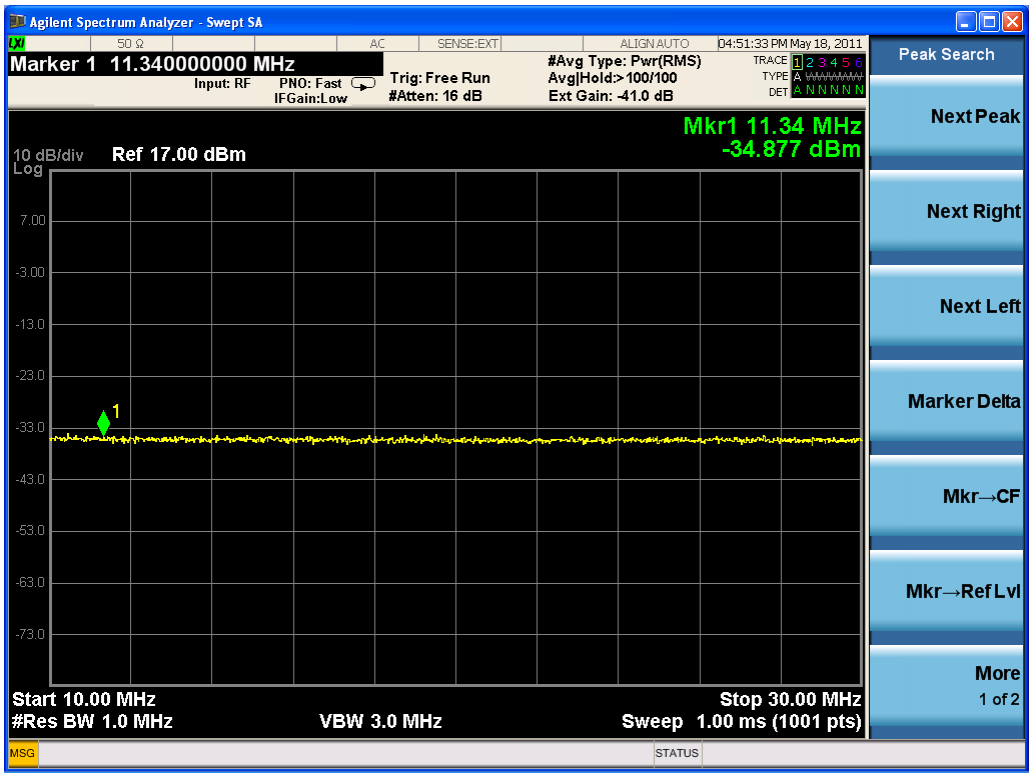

Agilent Spectrum Analyzer - Swept SA
Marker 1 1.920000000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 14 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
04:38:48 PM May 18, 2011
Mkr1 1.920 00 GHz -19.908 dBm
10 dB/div Log
Ref 18.00 dBm
Start 1.0000 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.9200 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

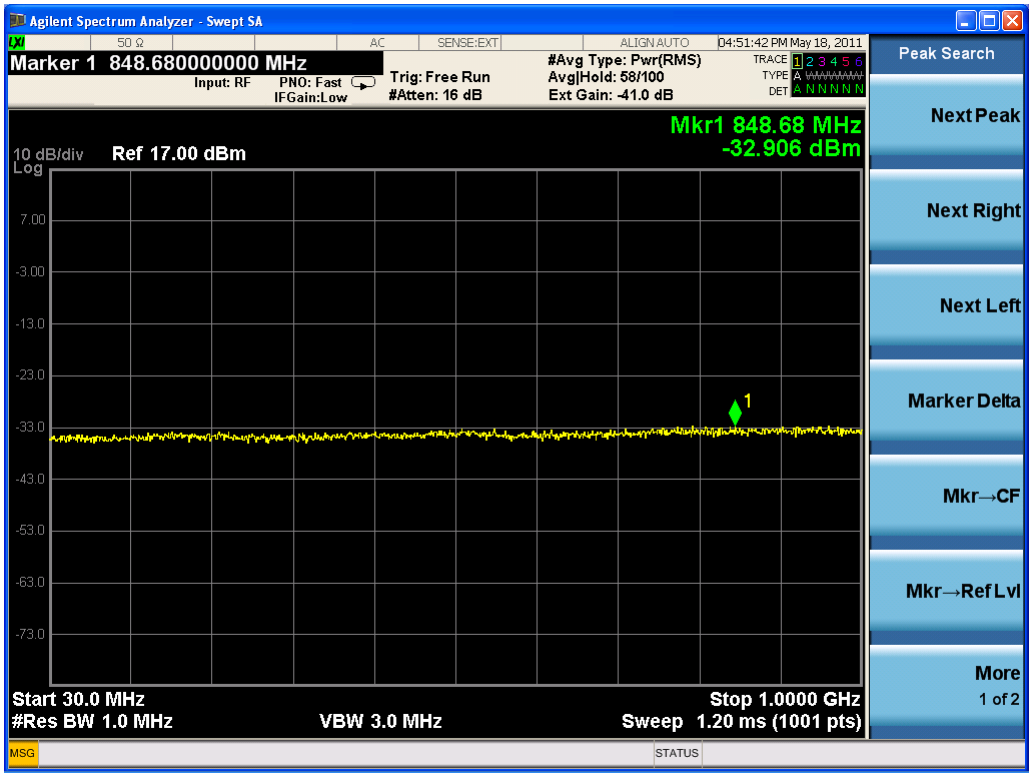

Agilent Spectrum Analyzer - Swept SA
Marker 1 1.950000000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 20 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
04:40:34 PM May 18, 2011
Mkr1 1.950 GHz -16.076 dBm
10 dB/div Log
Ref 18.00 dBm
Start 1.950 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 20.000 GHz
Sweep 45.1 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

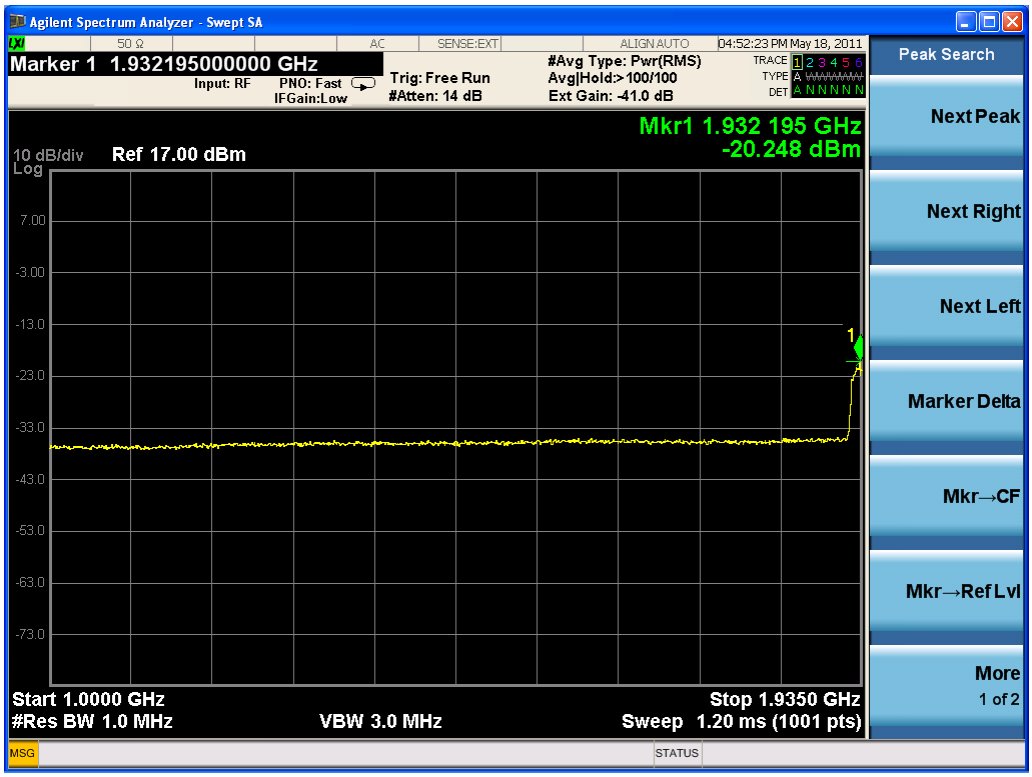
Two carriers (working in middle frequency)

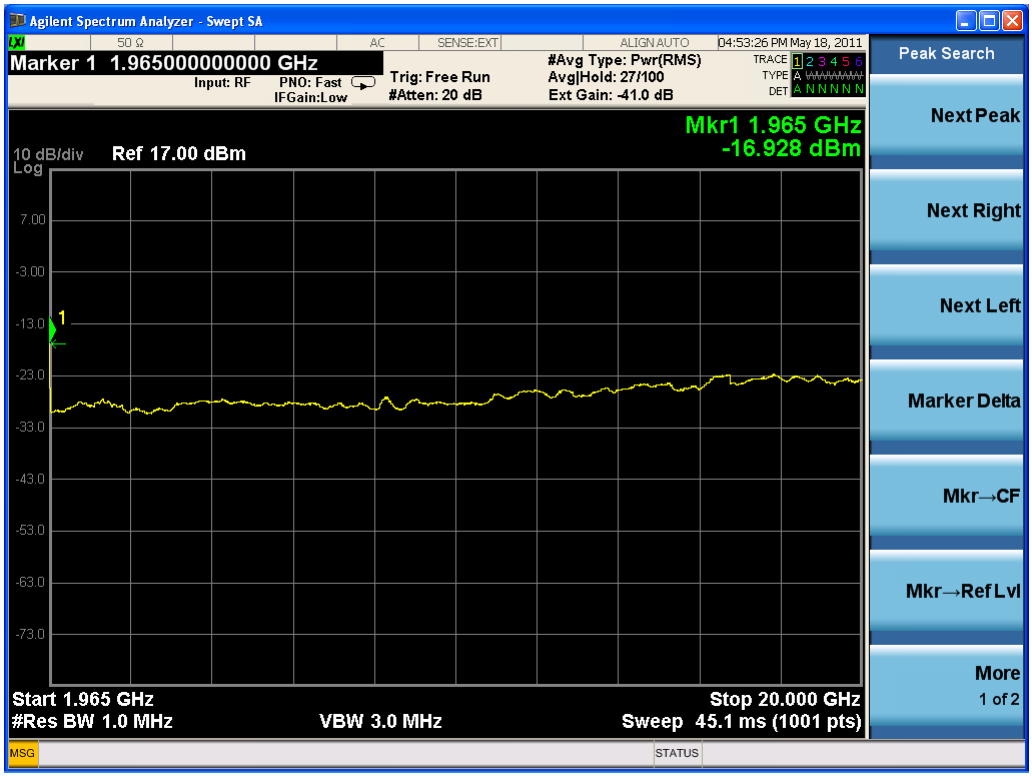




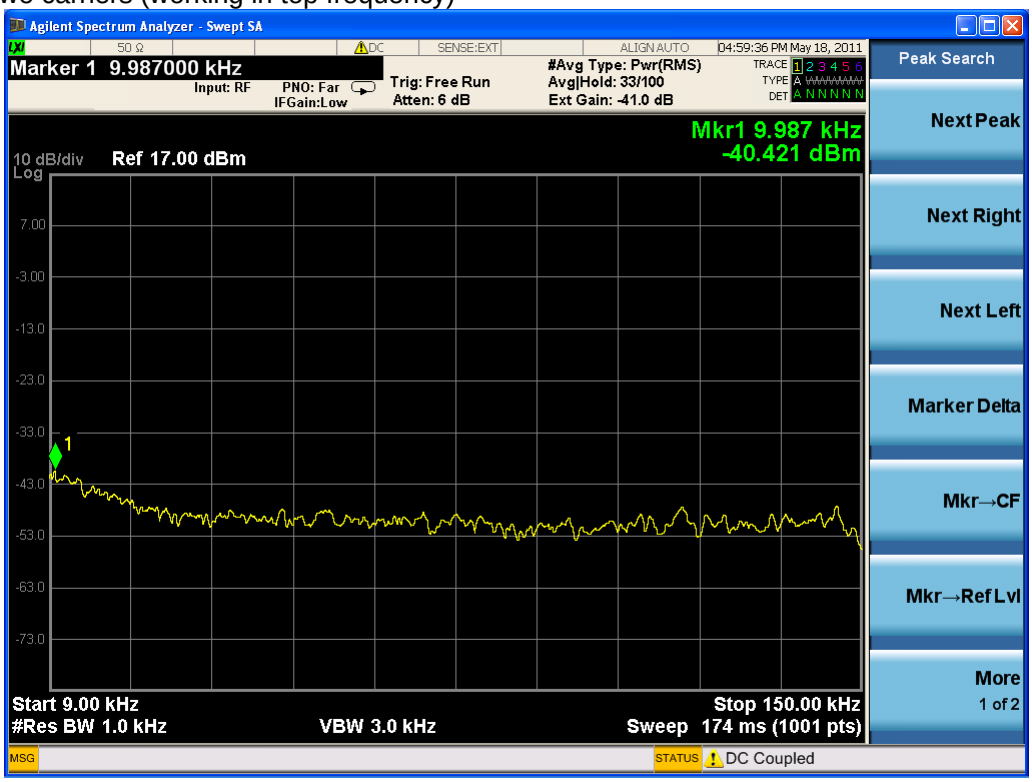

Agilent Spectrum Analyzer - Swept SA
Marker 1 11.340000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 16 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
04:51:33 PM May 18, 2011
Mkr1 11.34 MHz -34.877 dBm
10 dB/div Log
Ref 17.00 dBm
Start 10.00 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 30.00 MHz
Sweep 1.00 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

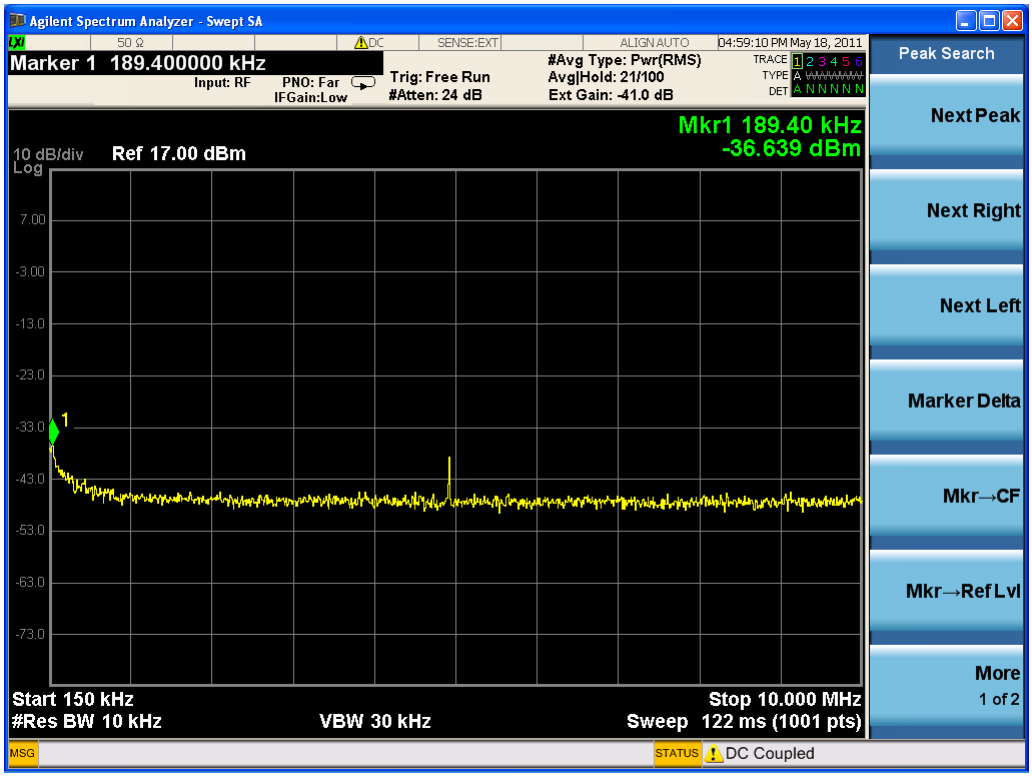

Agilent Spectrum Analyzer - Swept SA
Marker 1 848.680000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 16 dB
#Avg Type: Pwr(RMS) Avg|Hold: 58/100 Ext Gain: -41.0 dB
04:51:42 PM May 18, 2011
Mkr1 848.68 MHz -32.906 dBm
10 dB/div Log
Ref 17.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.0000 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

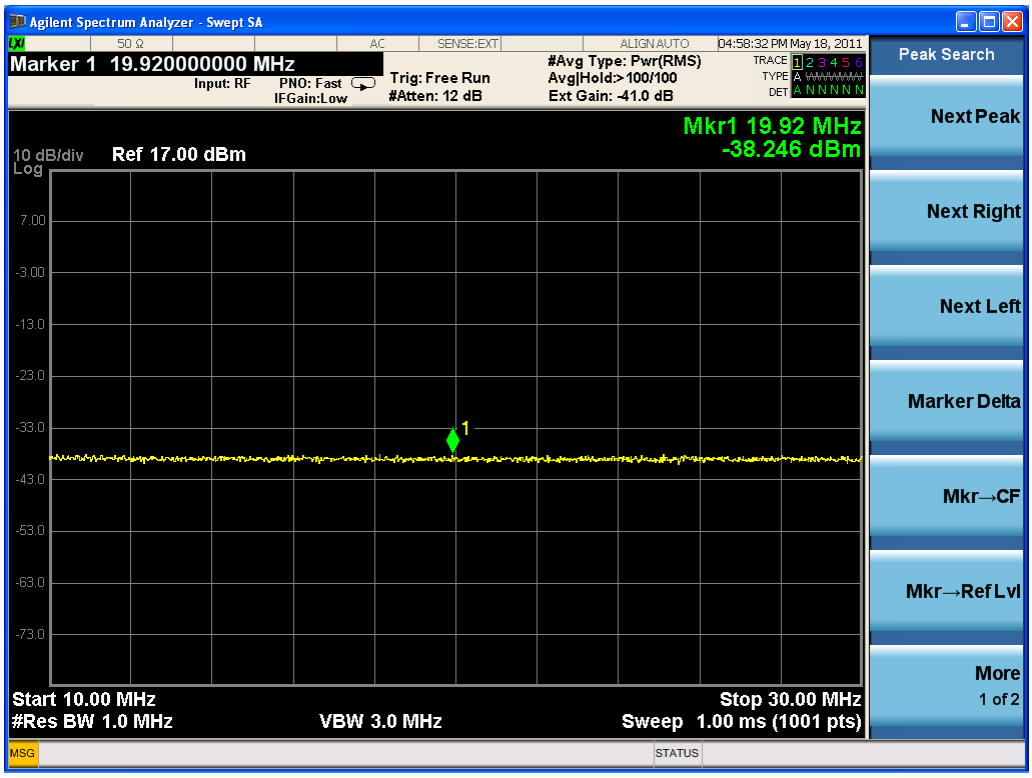

Agilent Spectrum Analyzer - Swept SA
Marker 1 1.932195000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 14 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
04:52:23 PM May 18, 2011
Mkr1 1.932 195 GHz -20.248 dBm
10 dB/div Log
Ref 17.00 dBm
Start 1.0000 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.9350 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

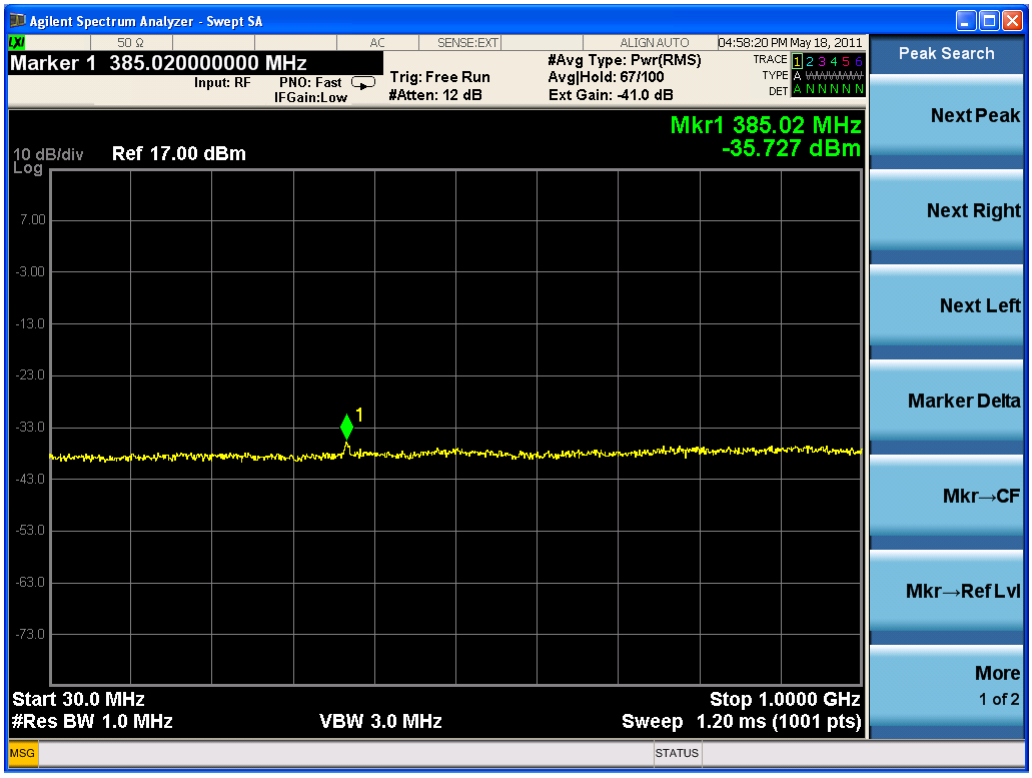

Agilent Spectrum Analyzer - Swept SA
Marker 1 1.965000000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 20 dB
#Avg Type: Pwr(RMS) Avg|Hold: 27/100 Ext Gain: -41.0 dB
04:53:26 PM May 18, 2011
Mkr1 1.965 GHz -16.928 dBm
10 dB/div Log
Ref 17.00 dBm
Start 1.965 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 20.000 GHz
Sweep 45.1 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

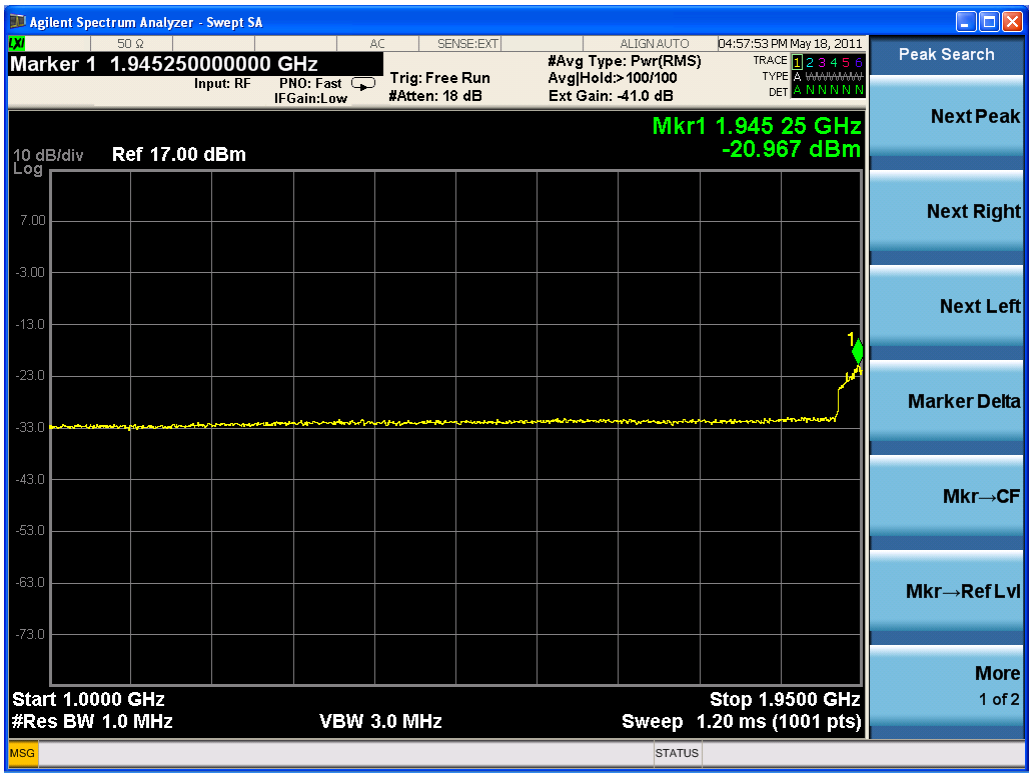
Two carriers (working in top frequency)

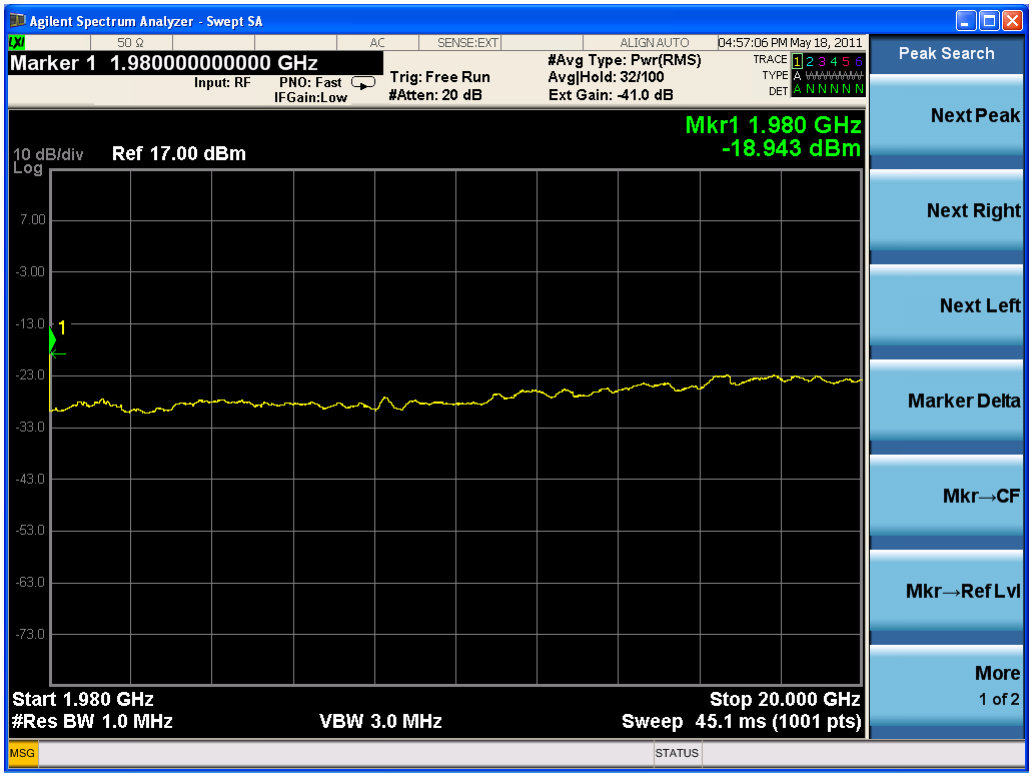




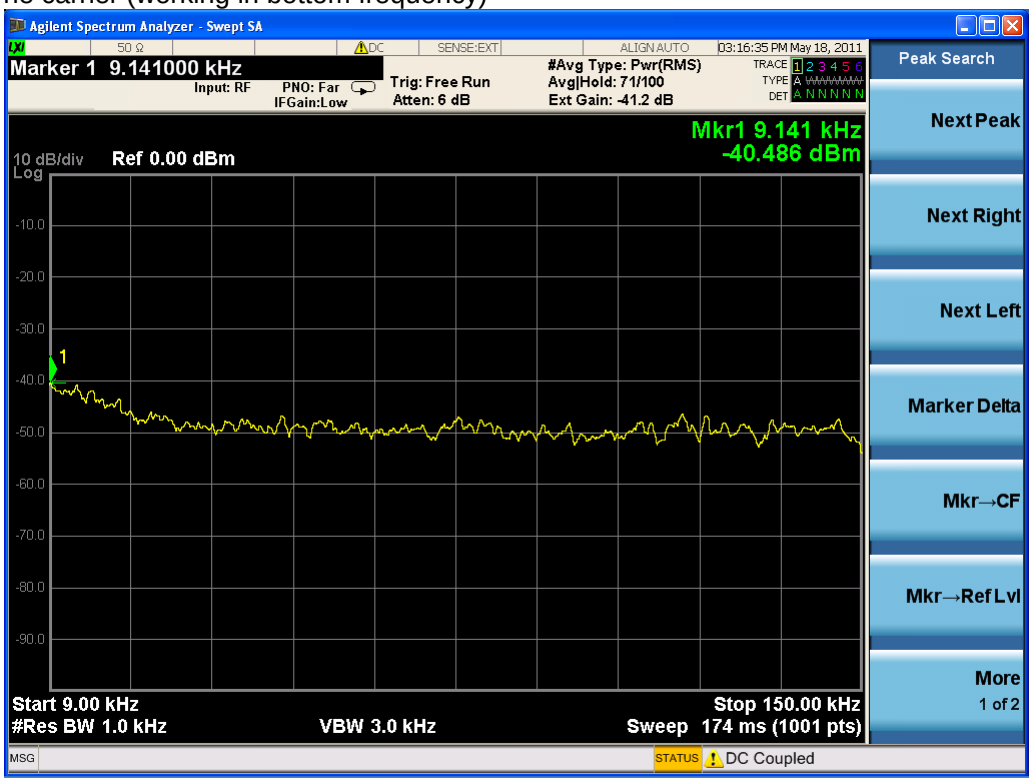

Agilent Spectrum Analyzer - Swept SA
Marker 1 19.920000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 12 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
04:58:32 PM May 18, 2011
Mkr1 19.92 MHz -38.246 dBm
10 dB/div Log
Ref 17.00 dBm
Start 10.00 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 30.00 MHz
Sweep 1.00 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

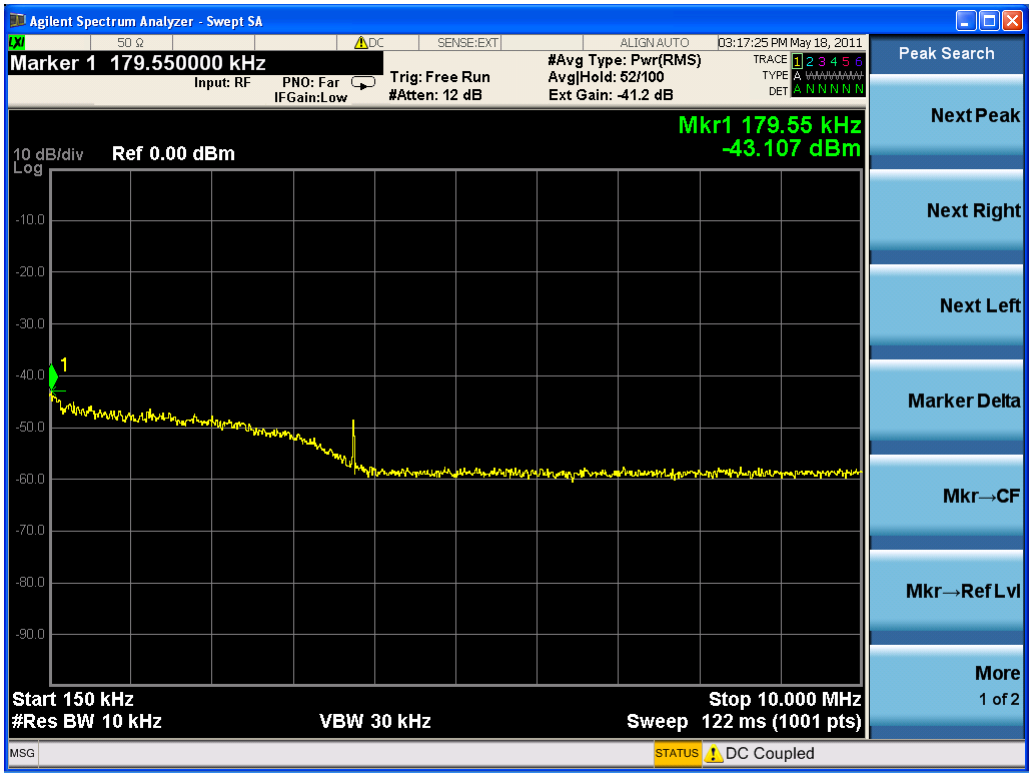

Agilent Spectrum Analyzer - Swept SA
Marker 1 385.020000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 12 dB
#Avg Type: Pwr(RMS) Avg|Hold: 67/100 Ext Gain: -41.0 dB
04:58:20 PM May 18, 2011
Mkr1 385.02 MHz -35.727 dBm
10 dB/div Log
Ref 17.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.0000 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

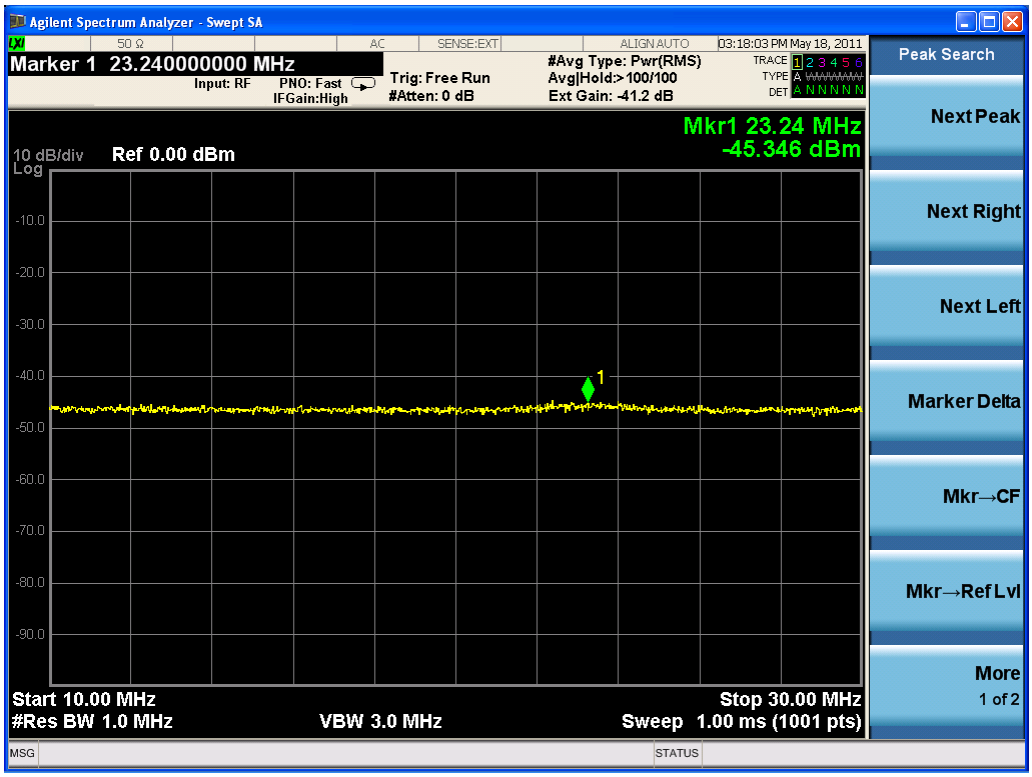

Agilent Spectrum Analyzer - Swept SA
Marker 1 1.945250000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 18 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
04:57:53 PM May 18, 2011
Mkr1 1.945 25 GHz -20.967 dBm
10 dB/div Log
Ref 17.00 dBm
Start 1.0000 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.9500 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

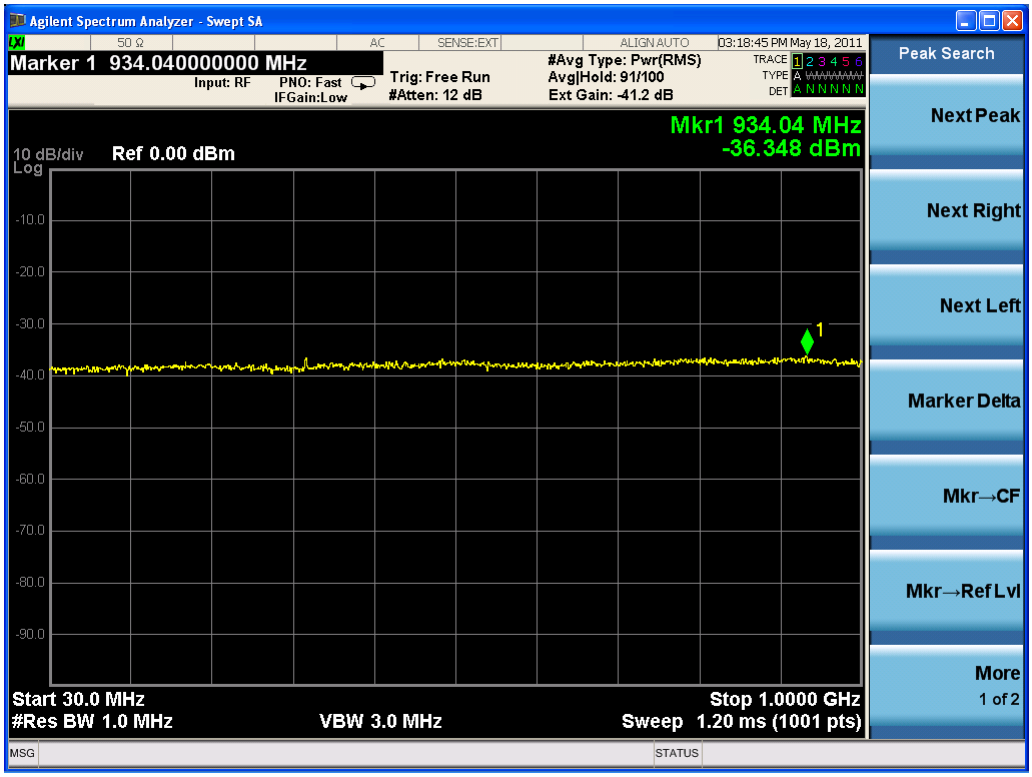

Agilent Spectrum Analyzer - Swept SA
Marker 1 1.980000000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 20 dB
#Avg Type: Pwr(RMS) Avg|Hold: 32/100 Ext Gain: -41.0 dB
04:57:06 PM May 18, 2011
Mkr1 1.980 GHz -18.943 dBm
10 dB/div Log
Ref 17.00 dBm
Start 1.980 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 20.000 GHz
Sweep 45.1 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

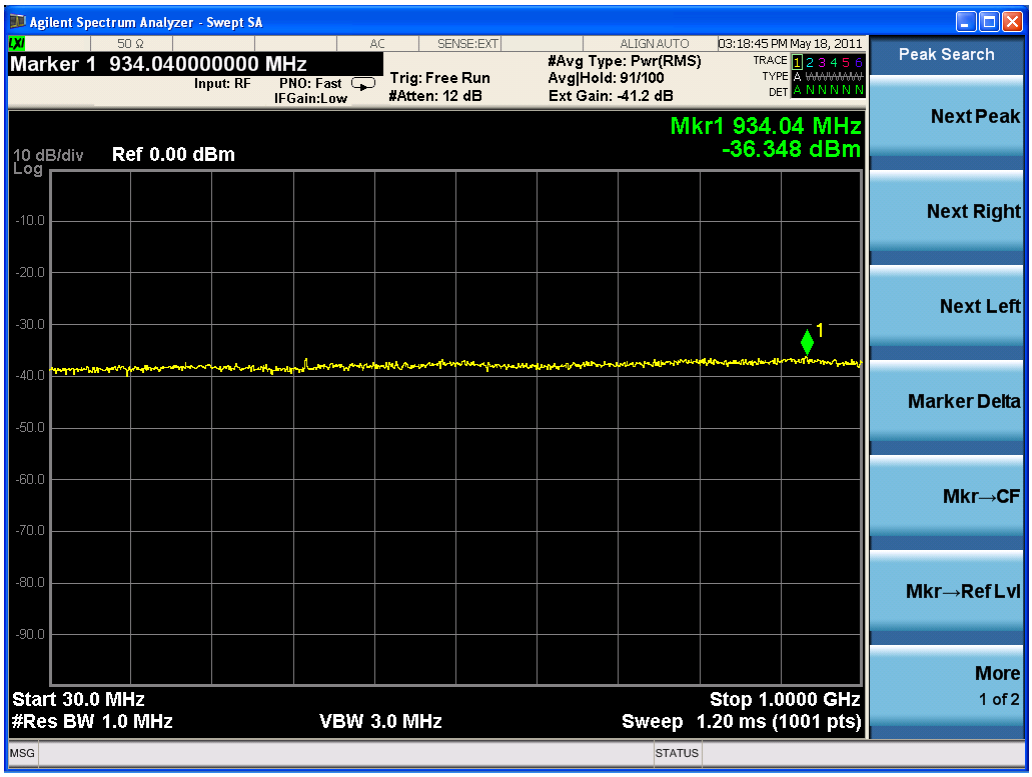
One carrier (working in bottom frequency)





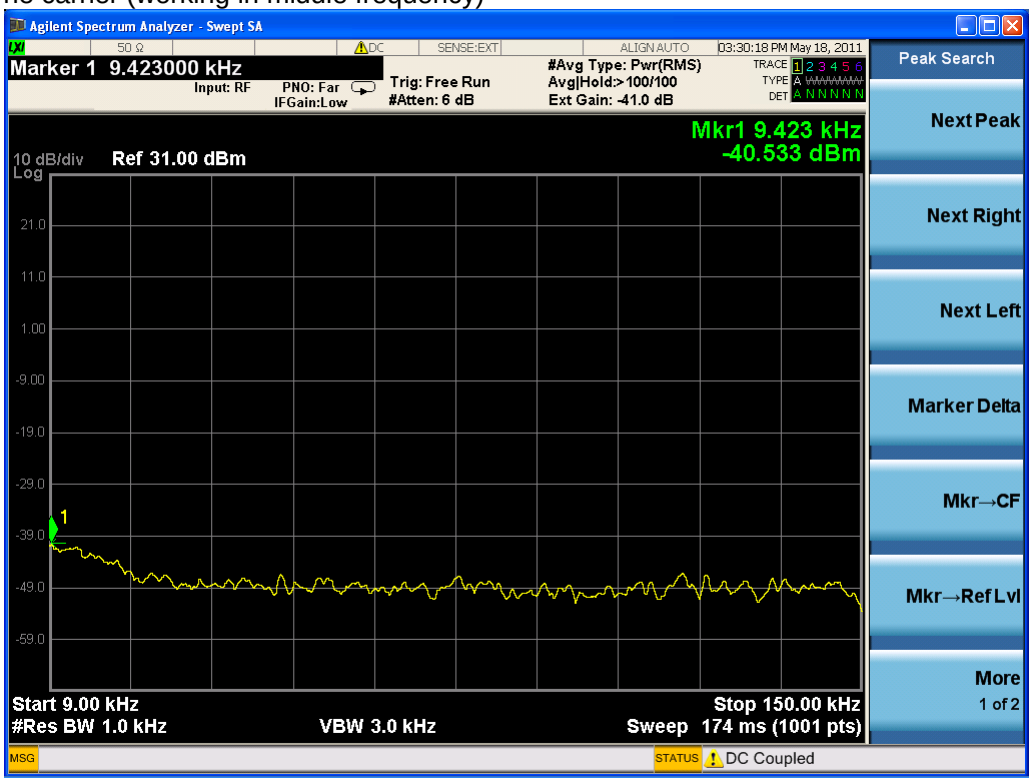

Agilent Spectrum Analyzer - Swept SA
Marker 1 23.240000000 MHz
Input: RF PNO: Fast IFGain:High
Trig: Free Run #Atten: 0 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.2 dB
03:18:03 PM May 18, 2011
Mkr1 23.24 MHz -45.346 dBm
10 dB/div Log
Ref 0.00 dBm
Start 10.00 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 30.00 MHz
Sweep 1.00 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

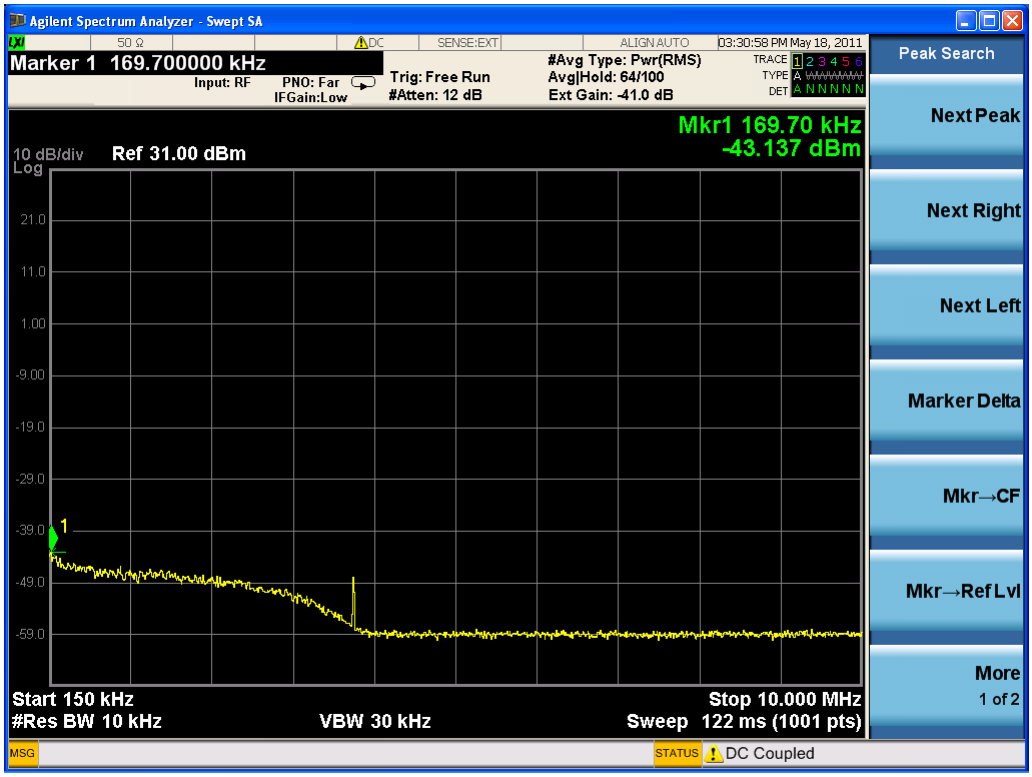

Agilent Spectrum Analyzer - Swept SA
Marker 1 934.040000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 12 dB
#Avg Type: Pwr(RMS) Avg|Hold: 91/100 Ext Gain: -41.2 dB
03:18:45 PM May 18, 2011
Mkr1 934.04 MHz -36.348 dBm
10 dB/div Log
Ref 0.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.0000 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

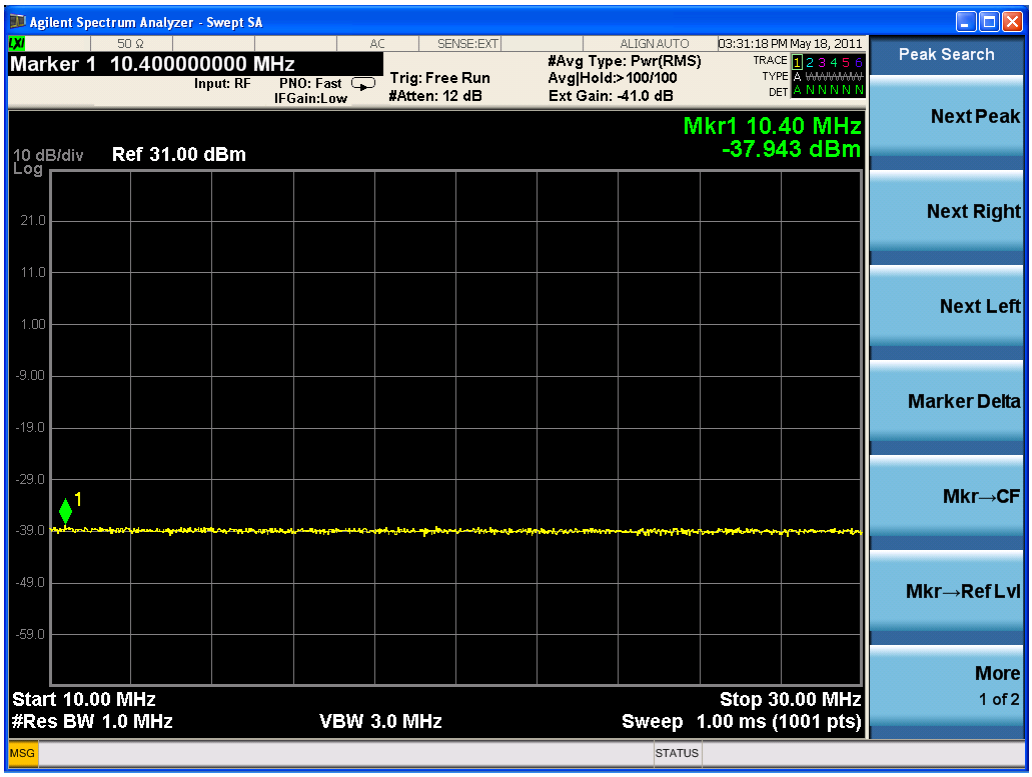

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:EXT
ALIGN AUTO
03:18:45 PM May 18, 2011
Marker 1 934.040000000 MHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 12 dB
#Avg Type: Pwr(RMS)
Avg|Hold: 91/100
Ext Gain: -41.2 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET A N N N N N
Mkr1 934.04 MHz
-36.348 dBm
10 dB/div
Log
Ref 0.00 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
1
Start 30.0 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.0000 GHz
Sweep 1.20 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

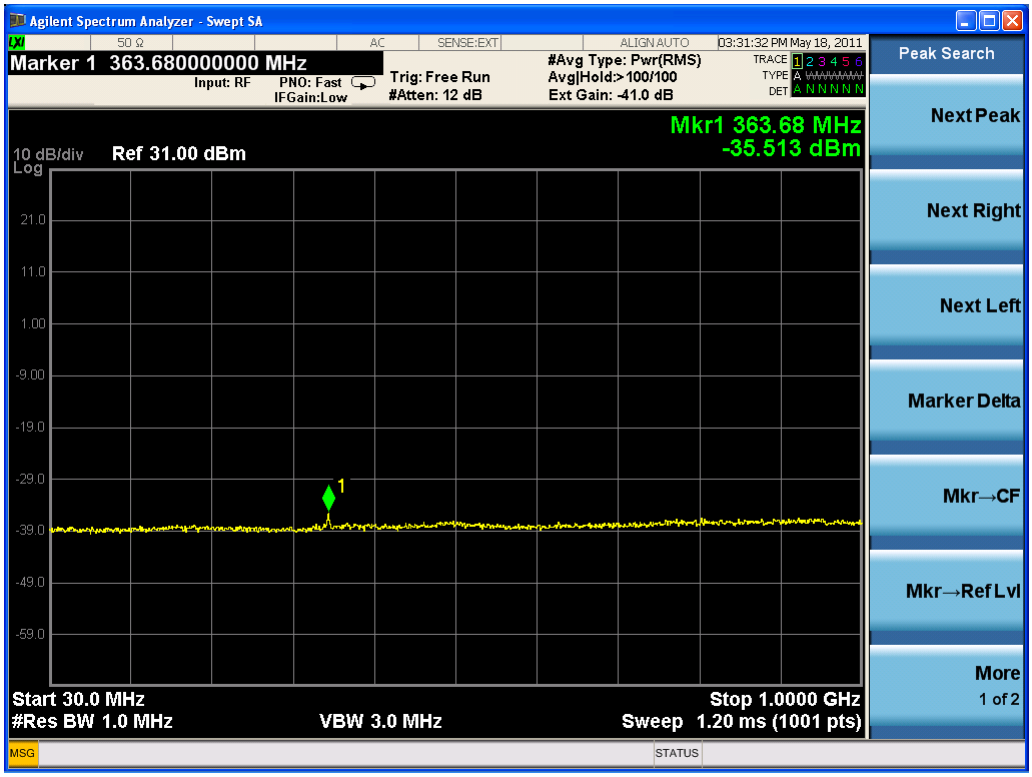

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:EXT
ALIGN AUTO
03:19:52 PM May 18, 2011
Marker 1 17.020925000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: Pwr(RMS)
Avg|Hold: 9/100
Ext Gain: -41.2 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET A N N N N N
Mkr1 17.021 GHz
-22.553 dBm
10 dB/div
Log
Ref 0.00 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
1
Start 1.945 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 20.000 GHz
Sweep 45.2 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

One carrier (working in middle frequency)





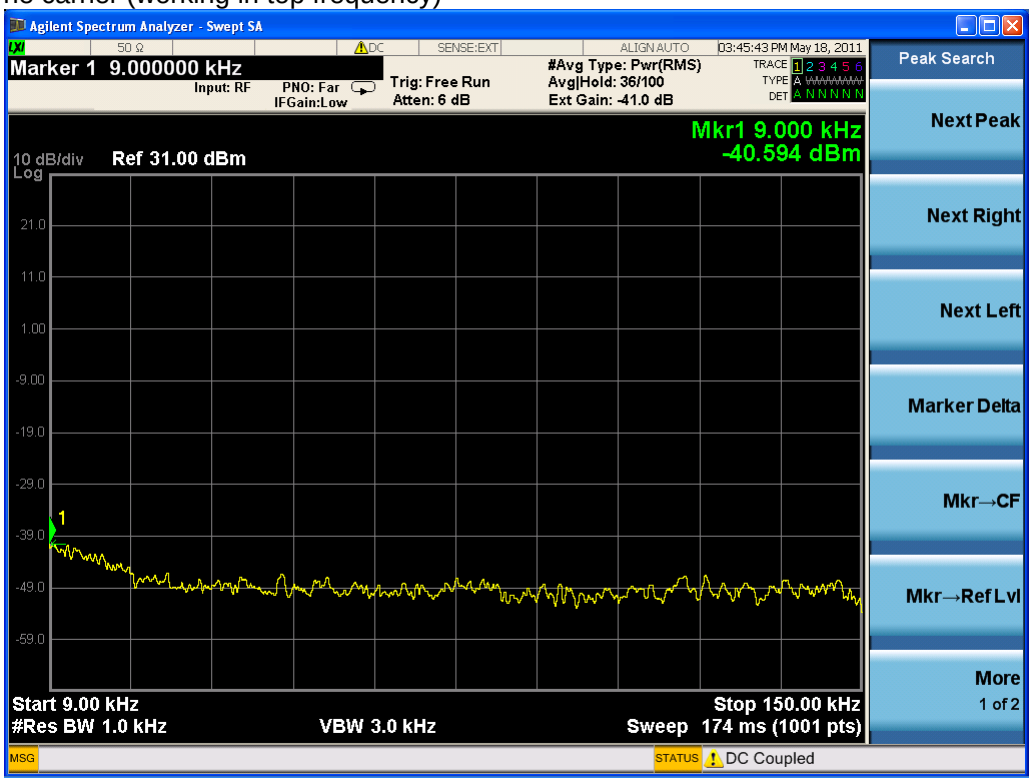

Agilent Spectrum Analyzer - Swept SA
Marker 1 10.400000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 12 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
03:31:18 PM May 18, 2011
Mkr1 10.40 MHz -37.943 dBm
10 dB/div Log
Ref 31.00 dBm
Start 10.00 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 30.00 MHz
Sweep 1.00 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

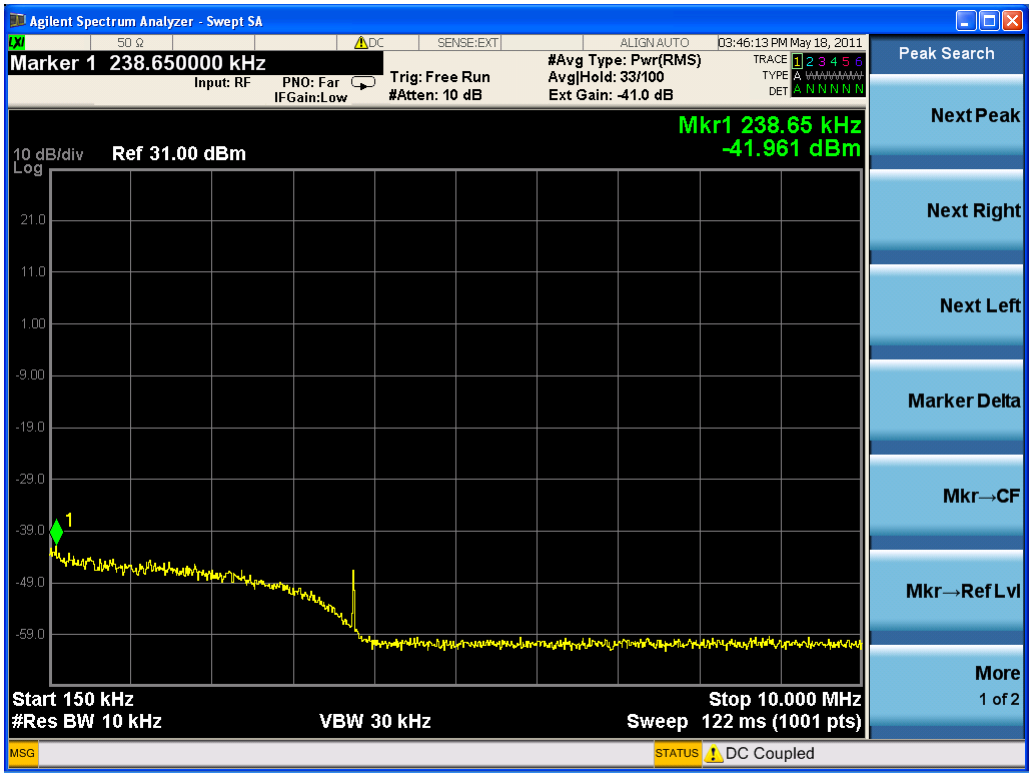

Agilent Spectrum Analyzer - Swept SA
Marker 1 363.680000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 12 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
03:31:32 PM May 18, 2011
Mkr1 363.68 MHz -35.513 dBm
10 dB/div Log
Ref 31.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.0000 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

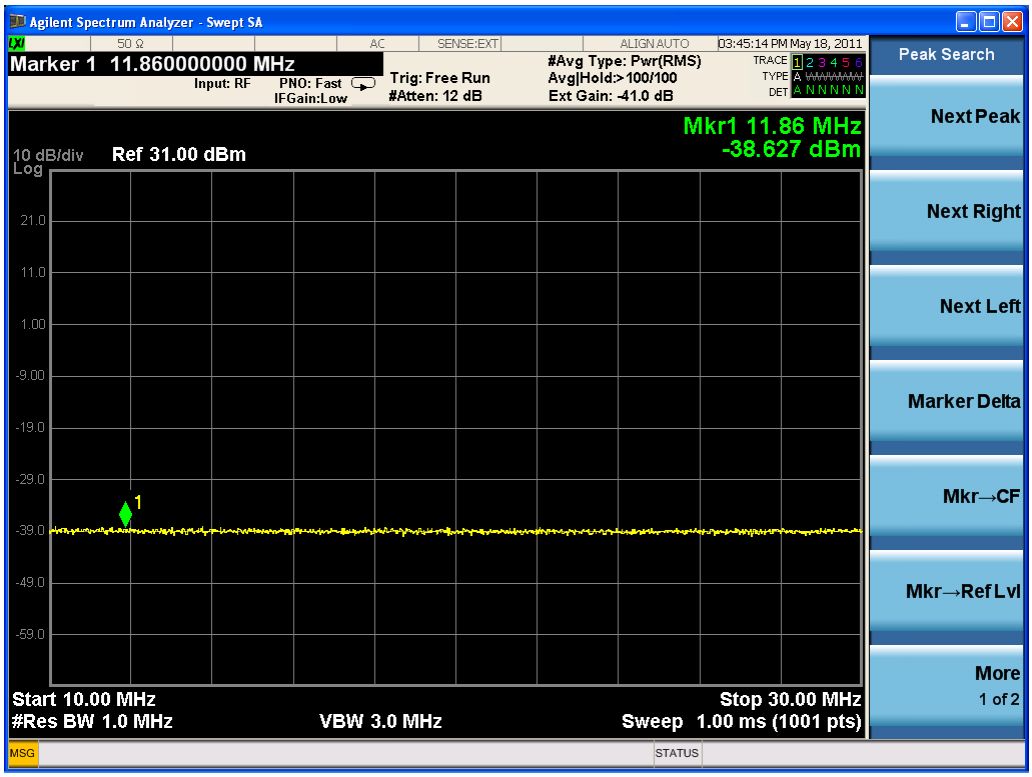

Agilent Spectrum Analyzer - Swept SA
Marker 1 1.935625000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 16 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
03:32:10 PM May 18, 2011
Mkr1 1.935 6 GHz -27.453 dBm
10 dB/div Log
Ref 31.00 dBm
Start 1.0000 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.9375 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

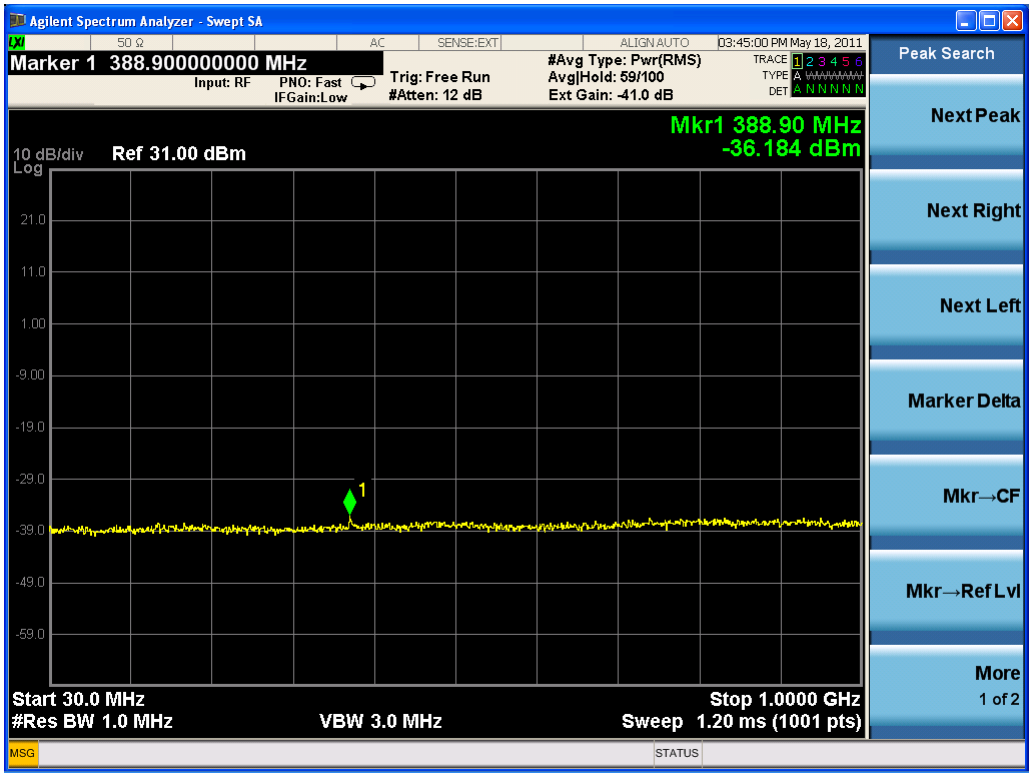

Agilent Spectrum Analyzer - Swept SA
Marker 1 18.088025000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 20 dB
#Avg Type: Pwr(RMS) Avg|Hold: 15/100 Ext Gain: -41.0 dB
03:32:48 PM May 18, 2011
Mkr1 18.088 GHz -22.881 dBm
10 dB/div Log
Ref 31.00 dBm
Start 1.963 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 20.000 GHz
Sweep 45.1 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

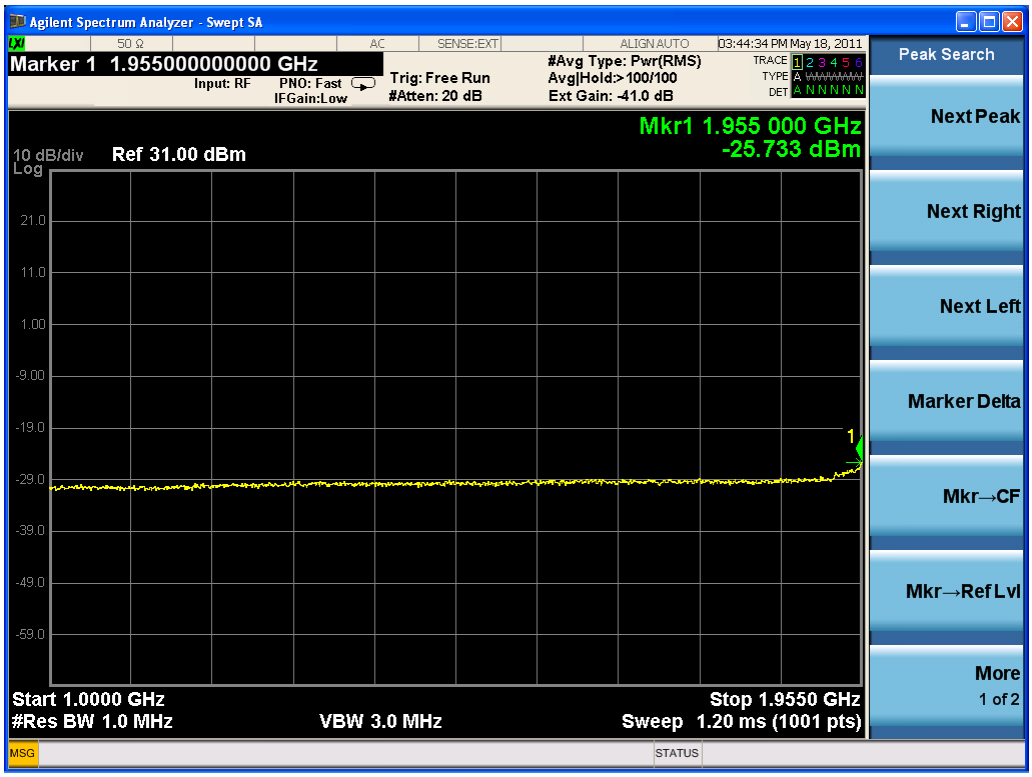
One carrier (working in top frequency)






Agilent Spectrum Analyzer - Swept SA
Marker 1 11.860000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 12 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
03:45:14 PM May 18, 2011
Mkr1 11.86 MHz -38.627 dBm
10 dB/div Log
Ref 31.00 dBm
Start 10.00 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 30.00 MHz
Sweep 1.00 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2


Agilent Spectrum Analyzer - Swept SA
Marker 1 388.900000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 12 dB
#Avg Type: Pwr(RMS) Avg|Hold: 59/100 Ext Gain: -41.0 dB
03:45:00 PM May 18, 2011
Mkr1 388.90 MHz -36.184 dBm
10 dB/div Log
Ref 31.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.0000 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2


Agilent Spectrum Analyzer - Swept SA
Marker 1 1.955000000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 20 dB
#Avg Type: Pwr(RMS) Avg|Hold:>100/100 Ext Gain: -41.0 dB
03:44:34 PM May 18, 2011
Mkr1 1.955 000 GHz -25.733 dBm
10 dB/div Log
Ref 31.00 dBm
Start 1.0000 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 1.9550 GHz
Sweep 1.20 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2


Agilent Spectrum Analyzer - Swept SA
Marker 1 16.882540000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 20 dB
#Avg Type: Pwr(RMS) Avg|Hold: 11/100 Ext Gain: -41.0 dB
03:44:04 PM May 18, 2011
Mkr1 16.883 GHz -22.742 dBm
10 dB/div Log
Ref 31.00 dBm
Start 1.980 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 20.000 GHz
Sweep 45.1 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

3.6 OCCUPIED BANDWIDTH

Applicable Standard: FCC §2.1049 §24.229 §24.238

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2011-4-8	2012-4-7
DST	DST100 40dB Attenuator	DTS100-40dB-N	N/A	N/A	N/A
Hewlett Packard	Hewlett Packard RF Cable	8120-6192	01428251	N/A	N/A

*__statement of traceability:__ ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements , traceable to NIST.

Test Procedure

The RF out of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. The resolution bandwidth of the spectrum analyzer was set at 1% of the span or higher and 99%Power bandwidth was recorded.

Environmental Conditions

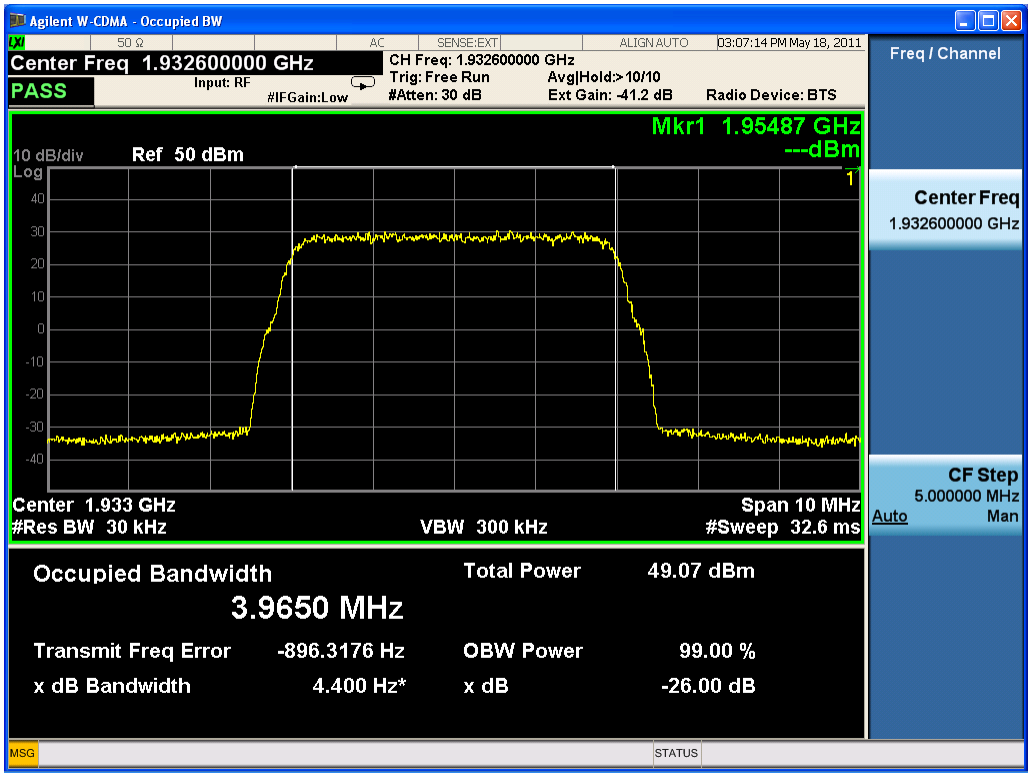
Temperature:	20 ° C
Relative Humidity:	53%
ATM Pressure:	1009mbar

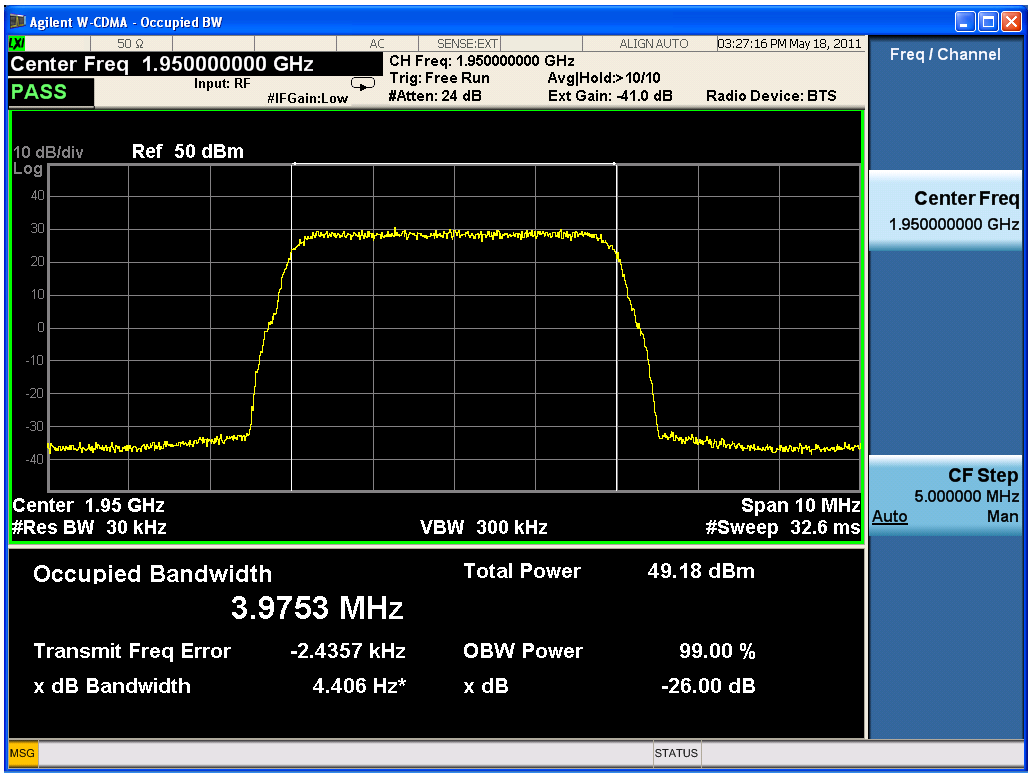
Test Result: Pass

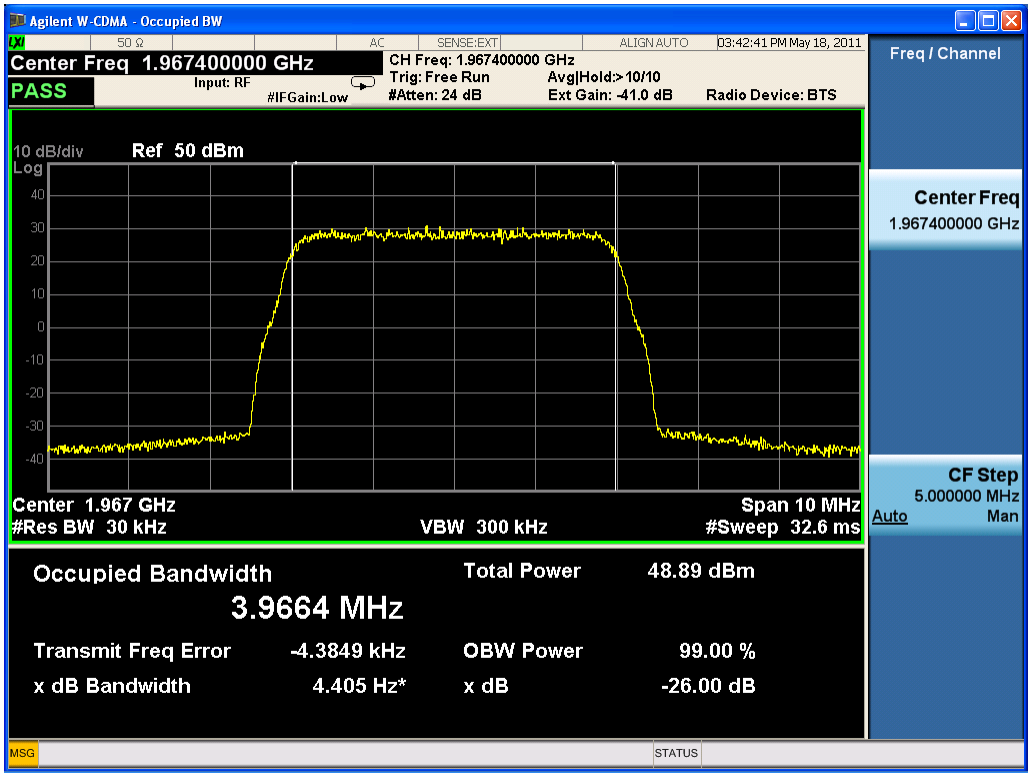
Test Mode: Transmitting UMTS

Test Data

Frequency (MHz)	99% Power Bandwidth (MHz)	Limit (MHz)
1932.6/1950/1967.4	3.9650/3.9753/3.9664	<4.2




Agilent W-CDMA - Occupied BW
50 Ω
AC
SENSE:EXT
ALIGN AUTO
03:27:16 PM May 18, 2011
Center Freq 1.950000000 GHz
PASS
Input: RF
#IFGain:Low
CH Freq: 1.950000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 24 dB
Ext Gain: -41.0 dB
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center Freq
1.950000000 GHz
Center 1.95 GHz
#Res BW 30 kHz
VBW 300 kHz
Span 10 MHz
#Sweep 32.6 ms
CF Step
5.000000 MHz
Auto
Man
Occupied Bandwidth
3.9753 MHz
Total Power
49.18 dBm
Transmit Freq Error
-2.4357 kHz
OBW Power
99.00 %
x dB Bandwidth
4.406 Hz*
x dB
-26.00 dB
MSG
STATUS


Agilent W-CDMA - Occupied BW
50 Ω
AC
SENSE:EXT
ALIGN AUTO
03:42:41 PM May 18, 2011
Center Freq 1.967400000 GHz
PASS
Input: RF
#IFGain:Low
CH Freq: 1.967400000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 24 dB
Ext Gain: -41.0 dB
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center Freq
1.967400000 GHz
Center 1.967 GHz
#Res BW 30 kHz
VBW 300 kHz
Span 10 MHz
#Sweep 32.6 ms
CF Step
5.000000 MHz
Auto
Man
Occupied Bandwidth
3.9664 MHz
Total Power
48.89 dBm
Transmit Freq Error
-4.3849 kHz
OBW Power
99.00 %
x dB Bandwidth
4.405 Hz*
x dB
-26.00 dB
MSG
STATUS

3.7 BAND EDGES

Applicable Standard: FCC §2.1051 §24.238

According to §2.1051 and §24.238, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (p) by a factor of at least 43 + 10 log (p) dB. The limit (dBm) should < P –(43+10log(P)) = -13dBm.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2011-4-8	2012-4-7
DST	DST100 40dB Attenuator	DTS100-40dB-N	N/A	N/A	N/A
Hewlett Packard	Hewlett Packard RF Cable	8120-6192	01428251	N/A	N/A

*__statement of traceability:__ ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements, traceable to NIST.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.
The center of the spectrum analyzer was set to block edge frequency.

Test Data Environmental Conditions

Temperature:	20 °C
Relative Humidity:	53%
ATM Pressure:	1009mbar

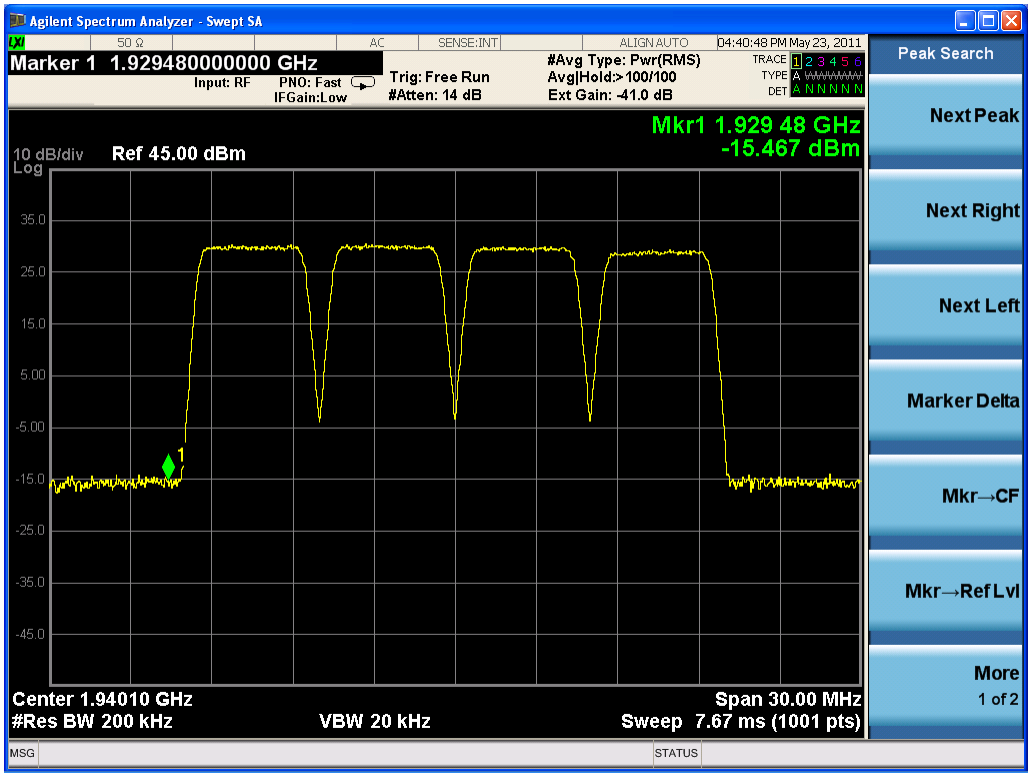
Test Result: Pass

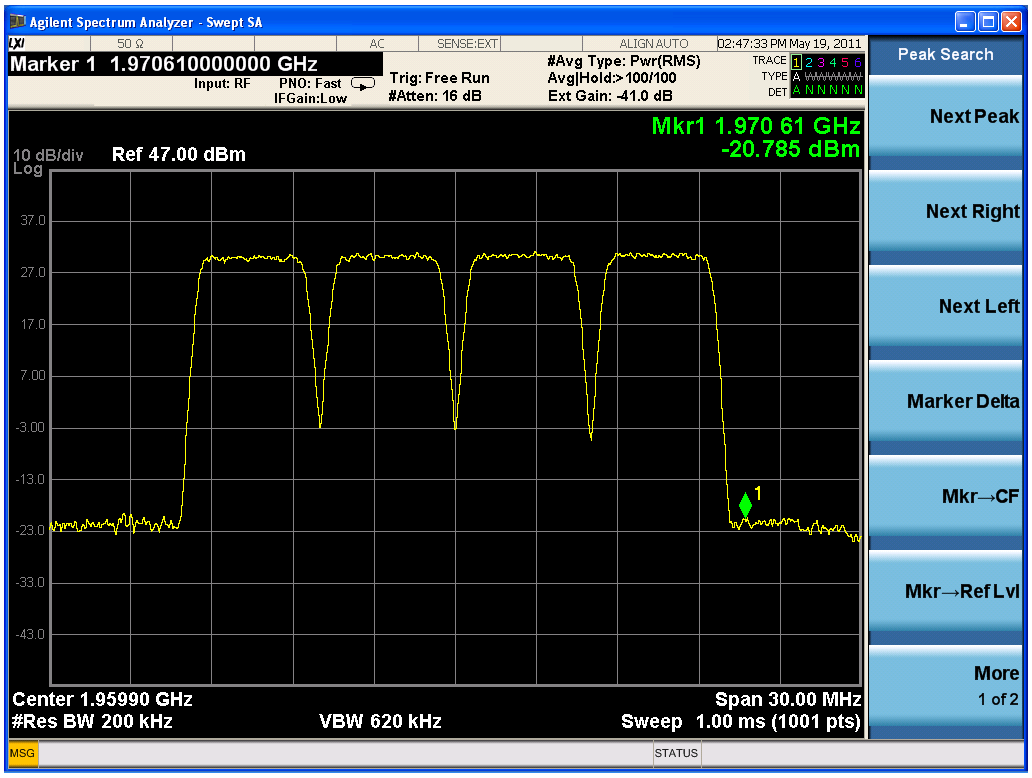
Test Mode: Transmitting UMTS

Test Data

Four carriers

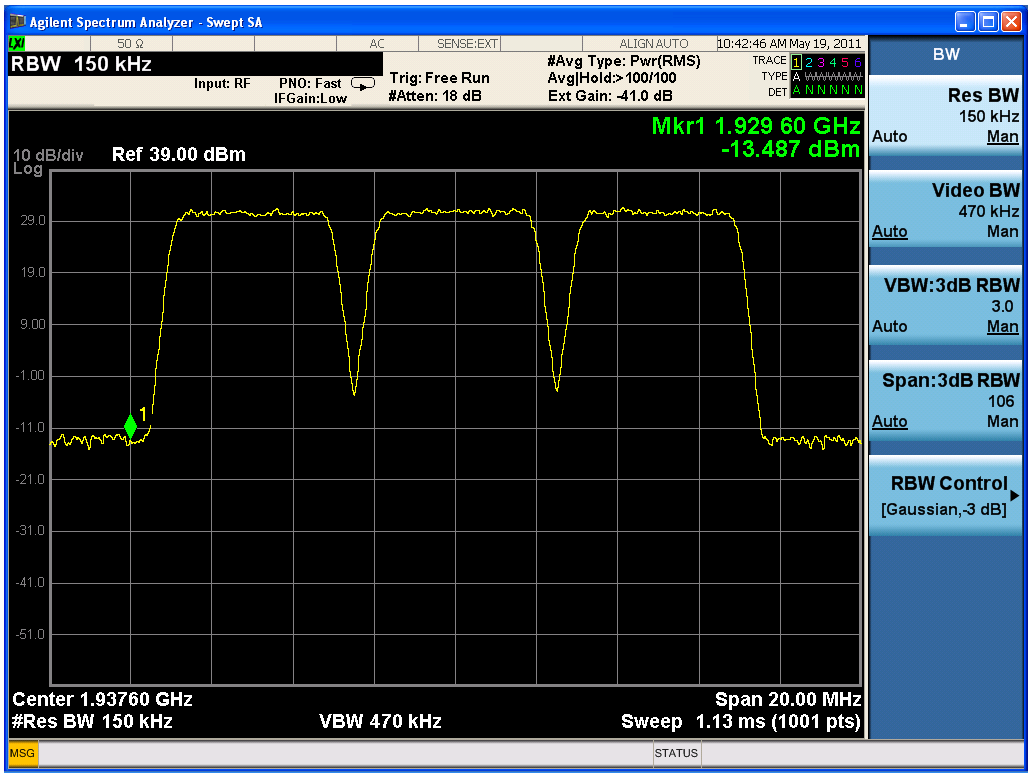
Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
1932.6/1937.6/1942.6/1947.6	-15.467	-13.00
1952.4/1957.4/1962.4/1967.4	-20.785	-13.00

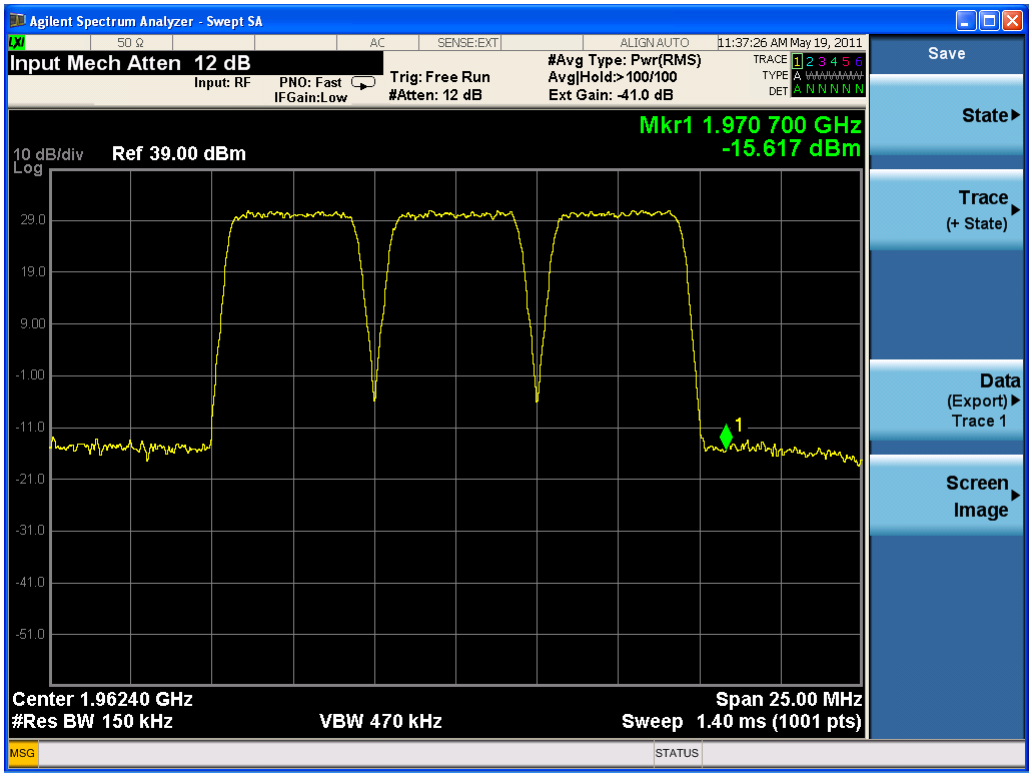




Three carriers

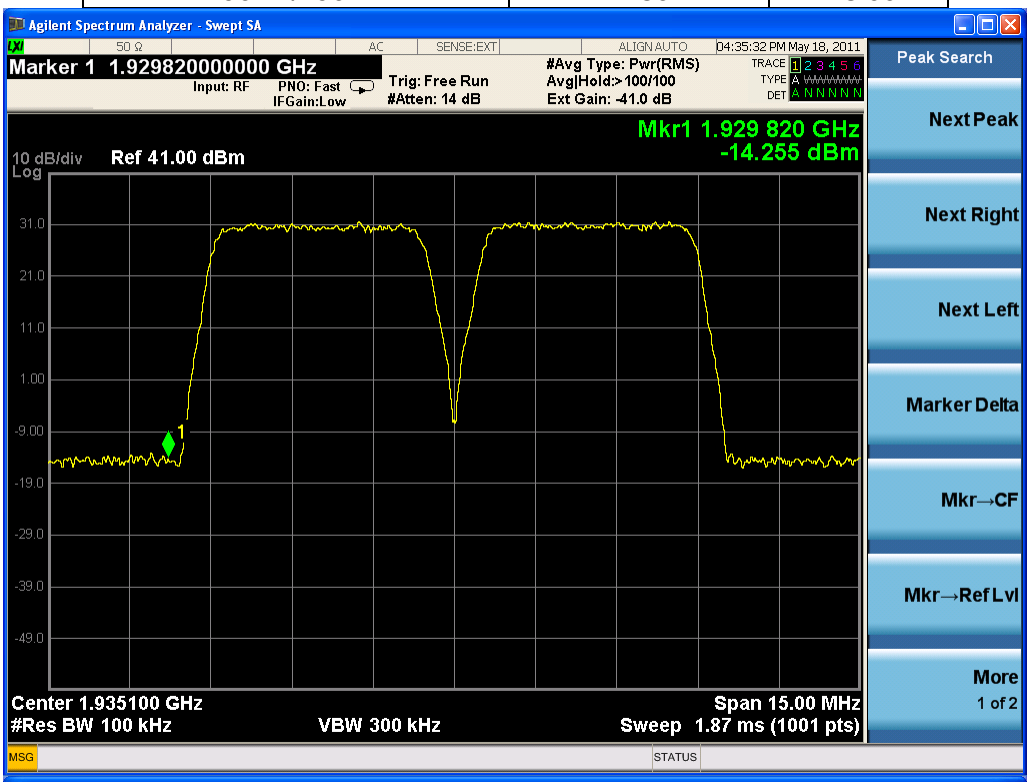
Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
1932.6/1937.6/1942.6	-13.487	-13.00
1957.4/1962.4/1967.4	-15.617	-13.00

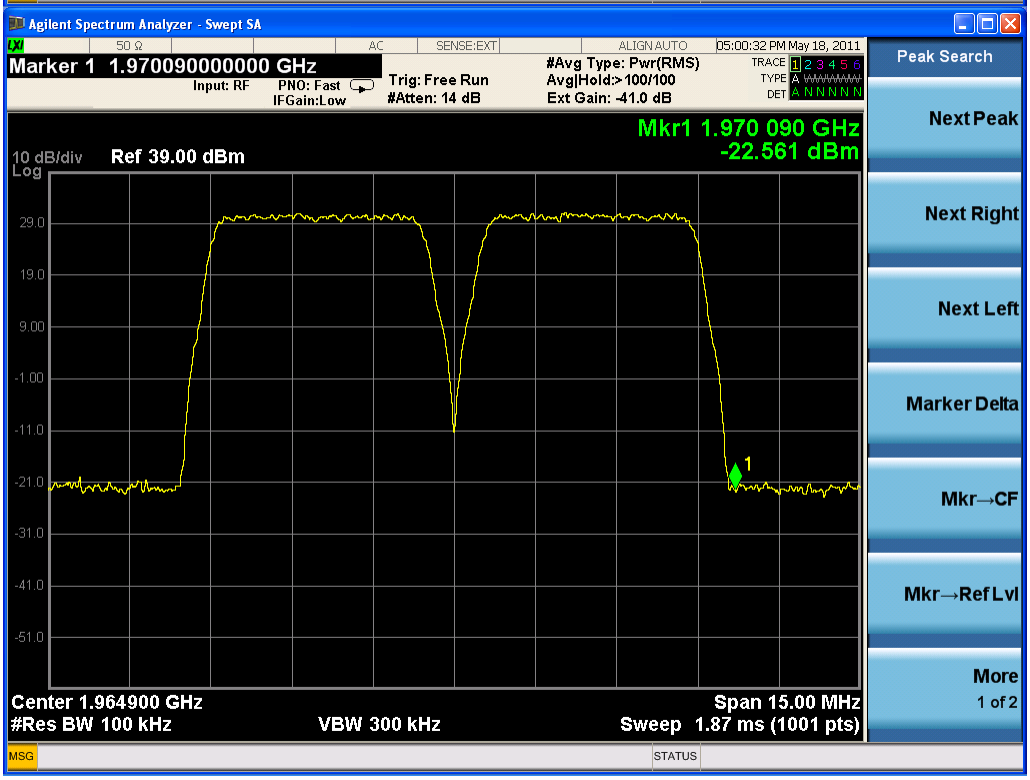

Agilent Spectrum Analyzer - Swept SA
RBW 150 kHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 18 dB
#Avg Type: Pwr(RMS)
Avg|Hold:>100/100
Ext Gain: -41.0 dB
10:42:46 AM May 19, 2011
Mkr1 1.929 60 GHz
-13.487 dBm
10 dB/div
Log
Ref 39.00 dBm
29.0
19.0
9.00
-1.00
-11.0
-21.0
-31.0
-41.0
-51.0
Center 1.93760 GHz
#Res BW 150 kHz
VBW 470 kHz
Span 20.00 MHz
Sweep 1.13 ms (1001 pts)
BW
Res BW
150 kHz
Auto
Man
Video BW
470 kHz
Auto
Man
VBW:3dB RBW
3.0
Auto
Man
Span:3dB RBW
106
Auto
Man
RBW Control
[Gaussian,-3 dB]
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Input Mech Atten 12 dB
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 12 dB
#Avg Type: Pwr(RMS)
Avg|Hold:>100/100
Ext Gain: -41.0 dB
11:37:26 AM May 19, 2011
Mkr1 1.970 700 GHz
-15.617 dBm
10 dB/div
Log
Ref 39.00 dBm
29.0
19.0
9.00
-1.00
-11.0
-21.0
-31.0
-41.0
-51.0
Center 1.96240 GHz
#Res BW 150 kHz
VBW 470 kHz
Span 25.00 MHz
Sweep 1.40 ms (1001 pts)
Save
State
Trace
(+ State)
Data
(Export)
Trace 1
Screen
Image
MSG
STATUS

Two carriers

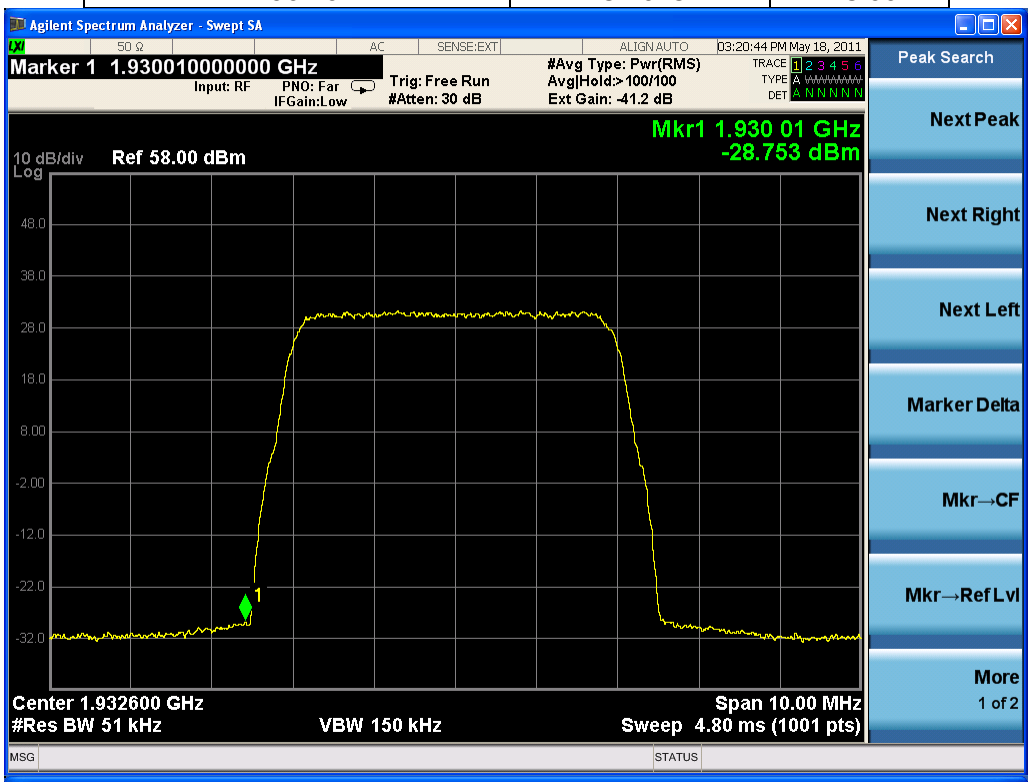
Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
1932.6/1937.6	-14.255	-13.00
1962.4/1967.4	-22.561	-13.00

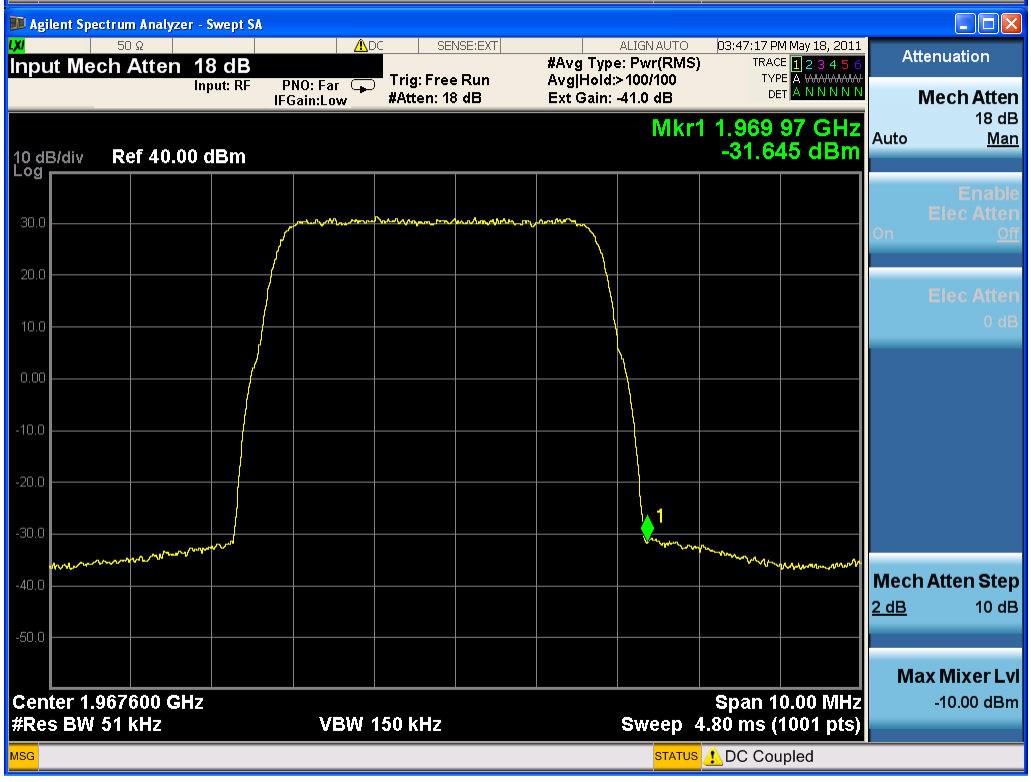




One carrier

Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
1932.6	-28.753	-13.00
1967.6	-31.645	-13.00





3.8 FREQUENCY STABILITY

Applicable Standard: FCC § 2.1055 § 24.235

Requirements: FCC § 2.1055 (a)(d) .The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
GZ-ESPEC	Temperature Chamber	EW0470	06113028	2011-1-26	2012-1-26
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2011-4-8	2012-4-7
DST	DST100 40dB Attenuator	DTS100-40dB-N	N/A	N/A	N/A
Hewlett Packard	Hewlett Packard RF Cable	8120-6192	01428251	N/A	N/A

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements , traceable to NIST.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a Spectrum Analyzer via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.
After the temperature stabilized for approximately 150 minutes, the frequency output was recorded from the counter.
Frequency Stability vs. Voltage: An external variable DC power supply Source. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the end point. The output frequency was recorded for each voltage.

Environmental Conditions

Normal condition:	25° C

Relative Humidity:	54%
ATM Pressure:	1011 mbar

Test Result: Pass

Test Mode: Transmitting UMTS

Test Data

Frequency Stability Versus Temperature

Frequency Stability vs. Temperature(1930-1970M)					
Temperature ℃	**Power Supplied VDC**	**Frequency Measure Error Hz**	**Error ppm**	**Limit ppm**	**Result**
B(1930.2MHz)					
-40	-48	2.81	0.001	0.02	PASS
-30	-48	4.62	0.002	0.02	PASS
-20	-48	-4.25	-0.002	0.02	PASS
-10	-48	-4.78	-0.002	0.02	PASS
0	-48	-2.31	-0.001	0.02	PASS
10	-48	2.36	0.001	0.02	PASS
20	-48	4.23	0.002	0.02	PASS
30	-48	2.21	0.001	0.02	PASS
40	-48	-2.36	-0.001	0.02	PASS
50	-48	2.65	0.001	0.02	PASS
55	-48	2.78	0.001	0.02	PASS
M(1950MHz)					
-40	-48	3.56	0.002	0.02	PASS
-30	-48	3.25	0.002	0.02	PASS
-20	-48	-3.33	-0.002	0.02	PASS
-10	-48	3.78	0.002	0.02	PASS
0	-48	-3.45	-0.002	0.02	PASS
10	-48	2.65	0.001	0.02	PASS

20	-48	3.21	0.002	0.02	PASS
30	-48	4.26	0.002	0.02	PASS
40	-48	-4.78	-0.002	0.02	PASS
50	-48	3.28	0.002	0.02	PASS
55	-48	2.39	0.001	0.02	PASS
T(1967.4MHz)					
-40	-48	3.36	0.002	0.02	PASS
-30	-48	-3.78	-0.002	0.02	PASS
-20	-48	2.65	0.001	0.02	PASS
-10	-48	1.98	0.001	0.02	PASS
0	-48	2.58	0.001	0.02	PASS
10	-48	-3.78	-0.002	0.02	PASS
20	-48	2.76	0.001	0.02	PASS
30	-48	3.24	0.002	0.02	PASS
40	-48	4.28	0.002	0.02	PASS
50	-48	-4.41	-0.002	0.02	PASS
55	-48	2.2	0.001	0.02	PASS

Frequency Stability Versus Voltage

Frequency Stability vs. Voltage (1930-1970M)					
B(1930.2M)					
Voltage Vac	**Temperature**	**Frequency Measure Error Hz**	**Error ppm**	**Limit ppm**	**Result**
-37	20	27.08	0.014	0.02	PASS
-39	20	-22.65	-0.012	0.02	PASS
-41	20	-20.94	-0.011	0.02	PASS
-43	20	-14.74	-0.008	0.02	PASS
-45	20	-20.51	-0.011	0.02	PASS
-47	20	-20.82	-0.011	0.02	PASS
-49	20	17.40	0.009	0.02	PASS
-51	20	-15.17	-0.008	0.02	PASS
-53	20	-29.29	-0.015	0.02	PASS
-55	20	21.83	0.011	0.02	PASS
-57	20	21.11	0.011	0.02	PASS
-59	20	21.95	0.011	0.02	PASS
-61	20	24.17	0.013	0.02	PASS
-62	20	24.72	0.013	0.02	PASS
T(1950M)					
-37	20	24.53	0.013	0.02	PASS
-39	20	6.06	0.003	0.02	PASS
-41	20	19.51	0.010	0.02	PASS
-43	20	-25.10	-0.013	0.02	PASS
-45	20	-23.34	-0.012	0.02	PASS
-47	20	-19.25	-0.010	0.02	PASS
-49	20	-22.26	-0.011	0.02	PASS
-51	20	16.98	0.009	0.02	PASS
-53	20	-21.93	-0.011	0.02	PASS
-55	20	20.11	0.010	0.02	PASS
-57	20	19.54	0.010	0.02	PASS
-59	20	20.66	0.011	0.02	PASS
-61	20	18.43	0.009	0.02	PASS
-62	20	23.93	0.012	0.02	PASS
T(1967.4M)					
-37	20	21.64	0.011	0.02	PASS
-39	20	35.54	0.018	0.02	PASS
-41	20	19.22	0.010	0.02	PASS

-43	20	20.79	0.011	0.02	PASS
-45	20	21.82	0.011	0.02	PASS
-47	20	-20.82	-0.011	0.02	PASS
-49	20	19.73	0.010	0.02	PASS
-51	20	23.73	0.012	0.02	PASS
-53	20	22.99	0.012	0.02	PASS
-55	20	-22.27	-0.011	0.02	PASS
-57	20	22.81	0.012	0.02	PASS
-59	20	21.16	0.011	0.02	PASS
-61	20	-20.10	-0.010	0.02	PASS
-62	20	-21.93	-0.011	0.02	PASS

4 GSM OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§2.1046 §24.232	Transmitter output Power	Compliant
§2.1091 §1.1037	RF Exposure	Compliant
§2.1047	Modulation Characteristic	Compliant
§2.1053	Spurious Radiated Emissions	Compliant
§2.1051, §24.238	Spurious Emissions AT Antenna Terminals	Compliant
§2.1049 §24.229 §24.238	Occupied Bandwidth	Compliant
§2.1051,§24.238	Band Edge	Compliant
§ 2.1055 § 24.235	Frequency stability	Compliant

4.1 TRANSMITTER OUTPUT POWER

Applicable Standard： FCC §2.1046 §24.232

According to FCC §2.1046 &24.232, the EIRP(equivalent isotropically radiated power) must not exceed 1640 Watts.
According to RSS-133, SRSP 510 5.1.1the EIRP(equivalent isotropically radiated power) must not exceed 3280Watts/MHz for base station transmitters operating in the band of 1930 MHz to 1995MHz with the antenna height above average terrain up to 300 meters. If used in urban area, the limit should be 1640Watts/MHz.

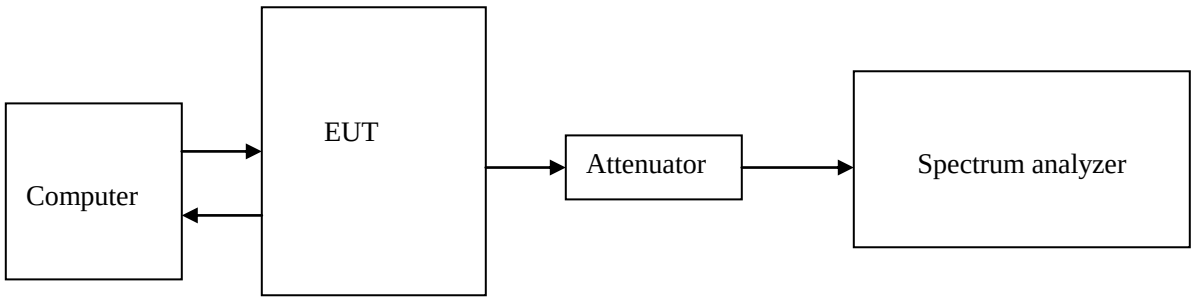
Note: EIRP= Max output Power+ Antenna gain- Cable Loss

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2011-4-8	2012-4-7
DTS	DTS100 40dB Attenuator	DTS100-40dB-N	N/A	N/A	N/A
Hewlett Packard	Hewlett Packard RF Cable	8120-6192	01428251	N/A	N/A

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements, traceable to NIST.

Test Procedure



The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. External attenuation Loss is 40dB, Cable Loss is about 3dB

Environmental Conditions

Temperature:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

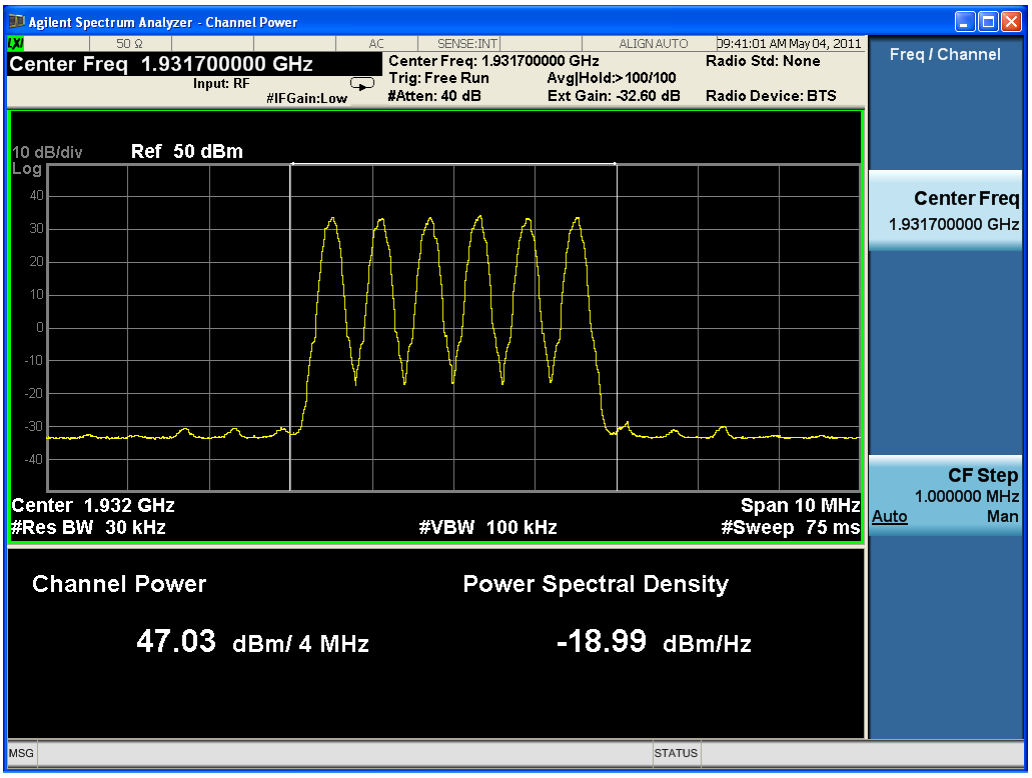
Test Result: Pass

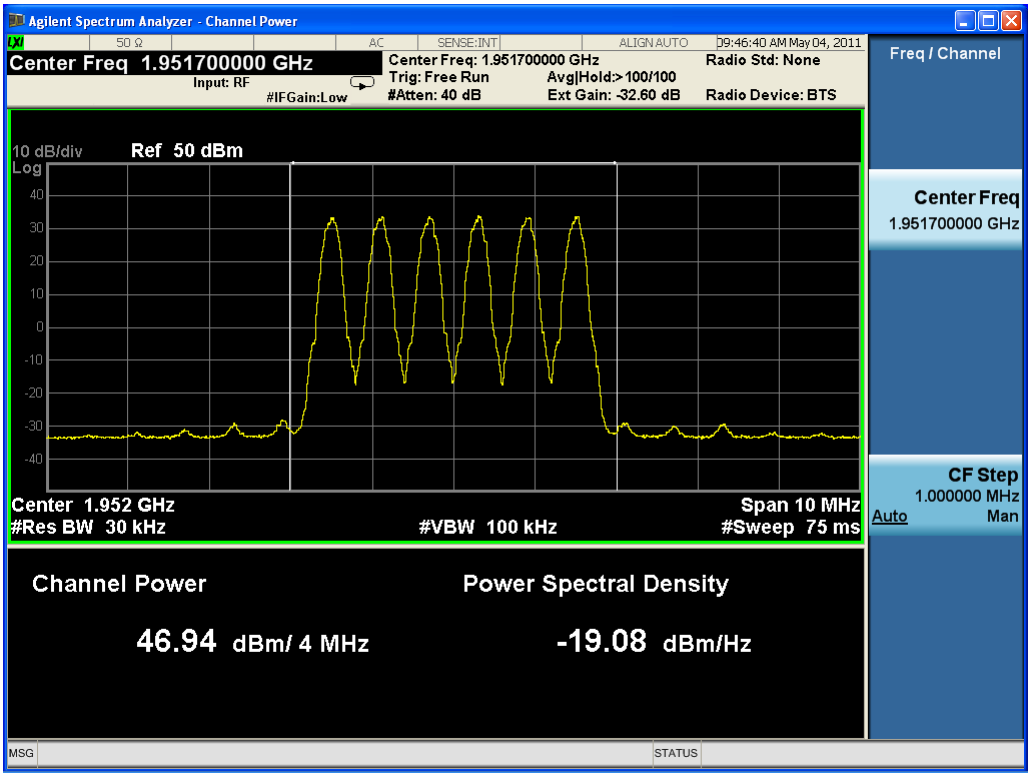
Test Mode: Transmitting GSM

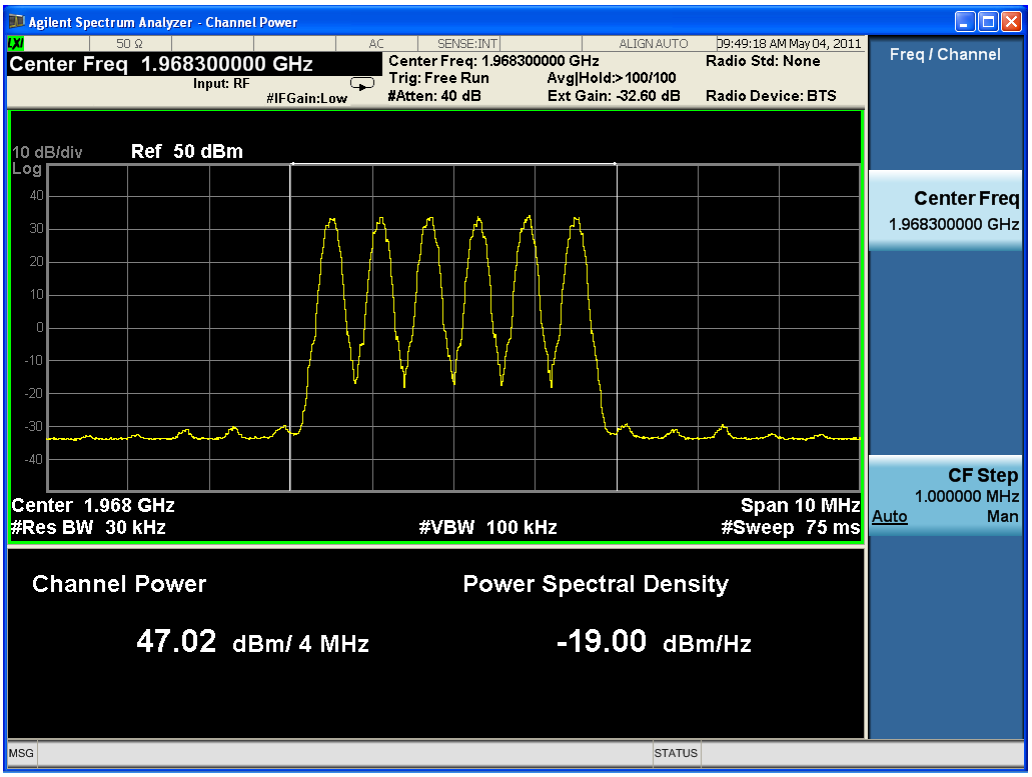
Test Data:

Six carriers

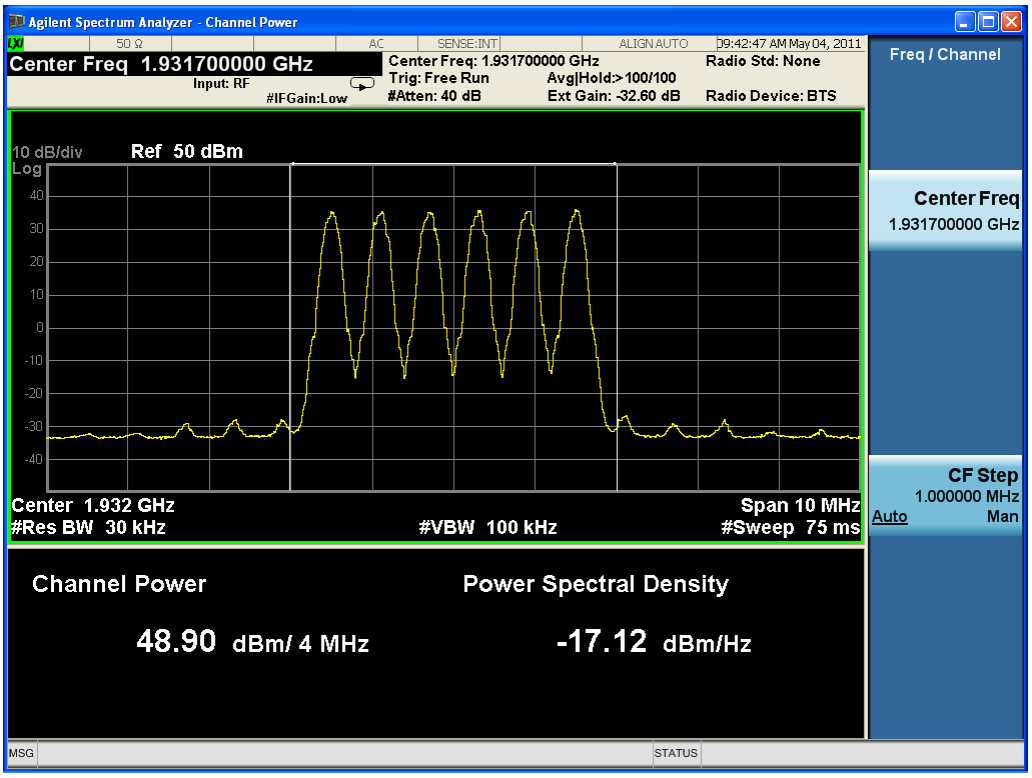
Modulation	Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
8PSK	1931.7	1930.2/1930.8/1931.4/1932/1932.6/1933.2	47.03
	1951.7	1950.2/1950.8/1951.4/1952/1952.6/1953.2	46.94
	1968.3	1966.8/1967.4/1968/1968.6/1969.2/1969.8	47.02

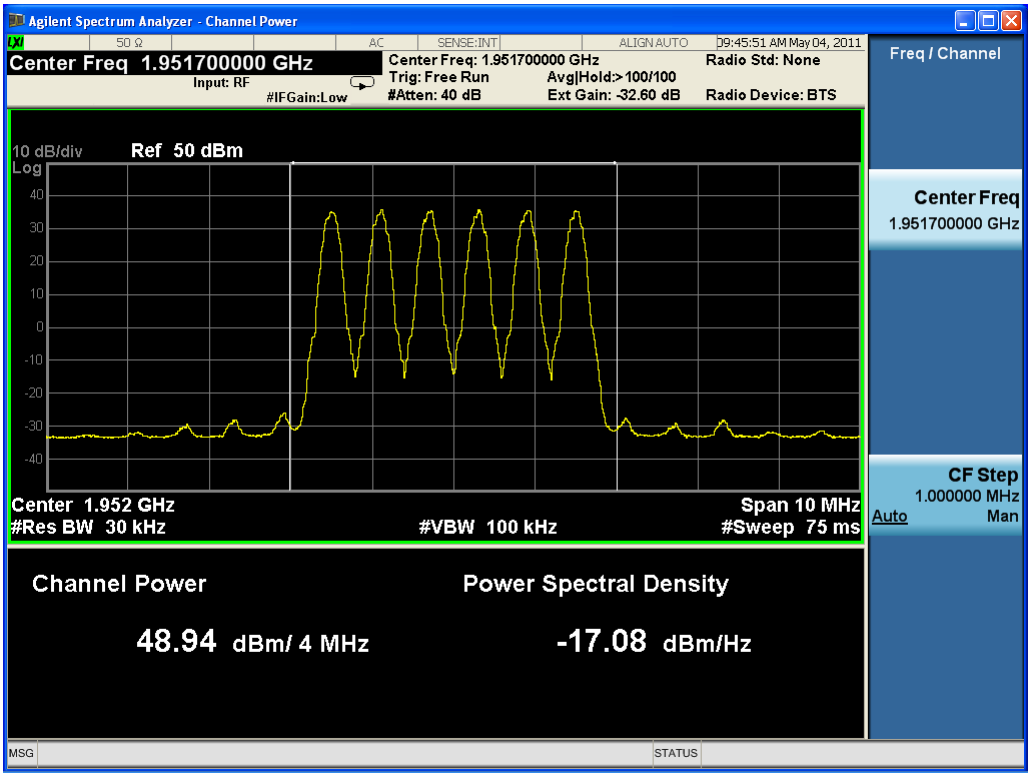

Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
09:41:01 AM May 04, 2011
Center Freq 1.931700000 GHz
Input: RF
#IFGain:Low
Center Freq: 1.931700000 GHz
Trig: Free Run
#Atten: 40 dB
Avg|Hold:>100/100
Ext Gain: -32.60 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center Freq
1.931700000 GHz
Center 1.932 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 10 MHz
#Sweep 75 ms
CF Step
1.000000 MHz
Auto
Man
Channel Power
47.03 dBm/ 4 MHz
Power Spectral Density
-18.99 dBm/Hz
MSG
STATUS

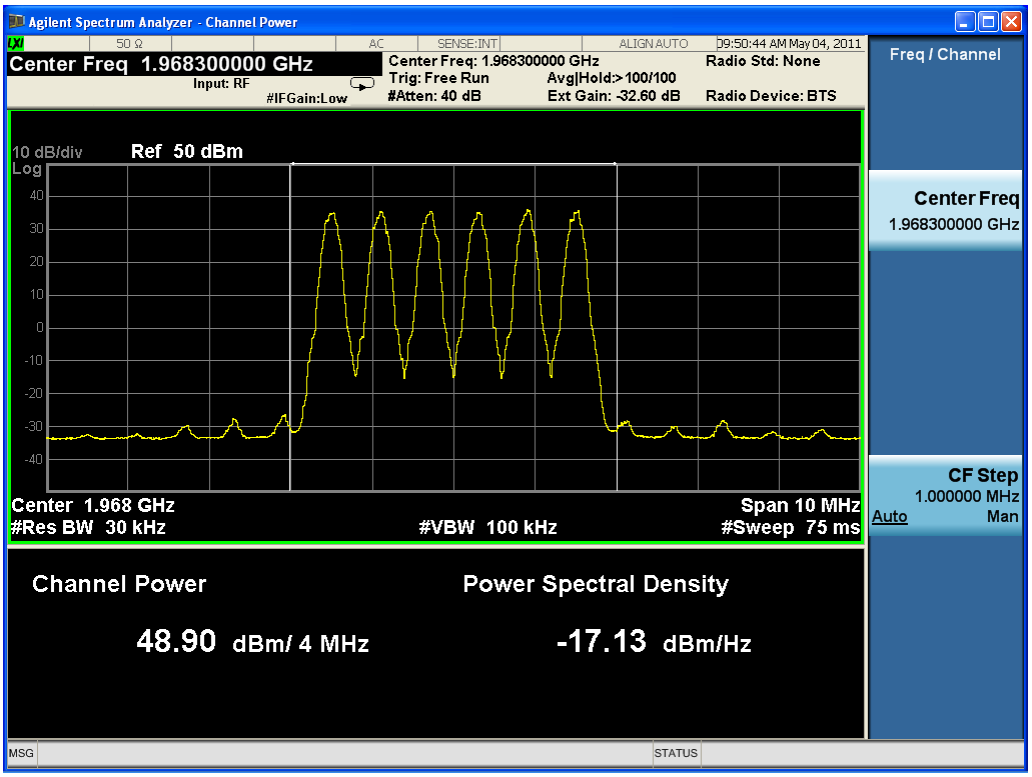

Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
09:46:40 AM May 04, 2011
Center Freq 1.951700000 GHz
Input: RF
#IFGain:Low
Center Freq: 1.951700000 GHz
Trig: Free Run
#Atten: 40 dB
Avg|Hold:>100/100
Ext Gain: -32.60 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center Freq
1.951700000 GHz
Center 1.952 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 10 MHz
#Sweep 75 ms
CF Step
1.000000 MHz
Auto
Man
Channel Power
46.94 dBm/ 4 MHz
Power Spectral Density
-19.08 dBm/Hz
MSG
STATUS



Modulation	Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
GMSK	1931.7	1930.2/1930.8/1931.4/1932/1932.6/1933.2	48.90
	1951.7	1950.2/1950.8/1951.4/1952/1952.6/1953.2	48.94
	1968.3	1966.8/1967.4/1968/1968.6/1969.2/1969.8	48.90

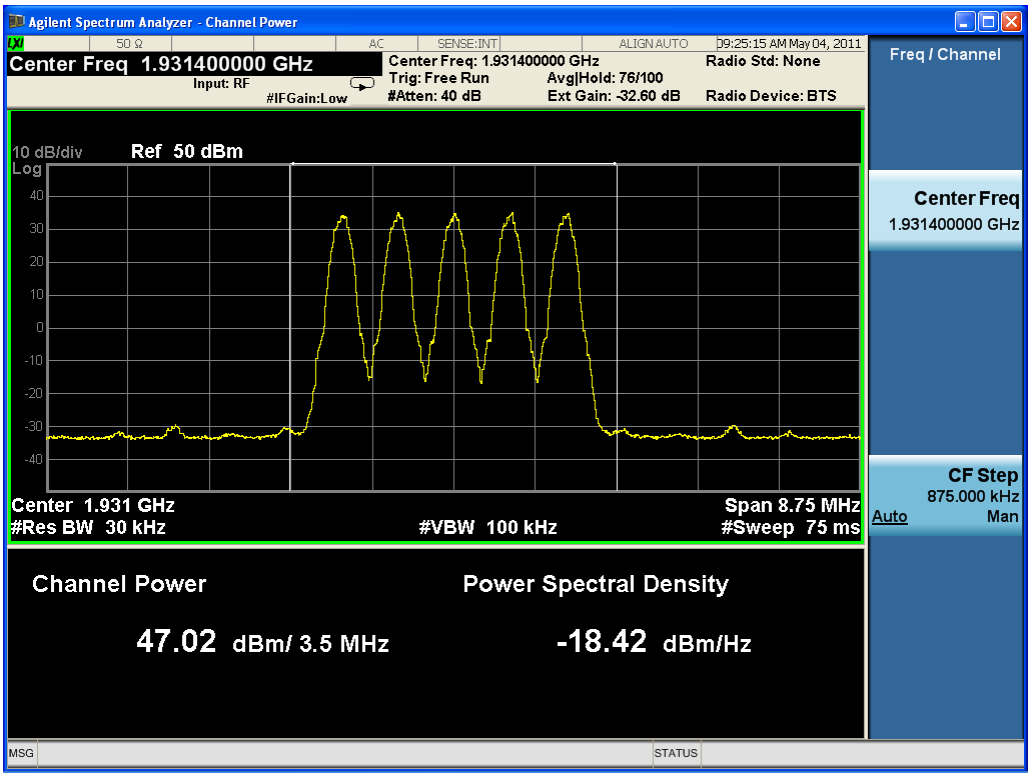

Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
09:42:47 AM May 04, 2011
Center Freq 1.931700000 GHz
Input: RF
#IFGain:Low
Center Freq: 1.931700000 GHz
Trig: Free Run
#Atten: 40 dB
Avg|Hold:>100/100
Ext Gain: -32.60 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center 1.932 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 10 MHz
#Sweep 75 ms
Center Freq
1.931700000 GHz
CF Step
1.000000 MHz
Auto
Man
Channel Power
48.90 dBm/ 4 MHz
Power Spectral Density
-17.12 dBm/Hz
MSG
STATUS

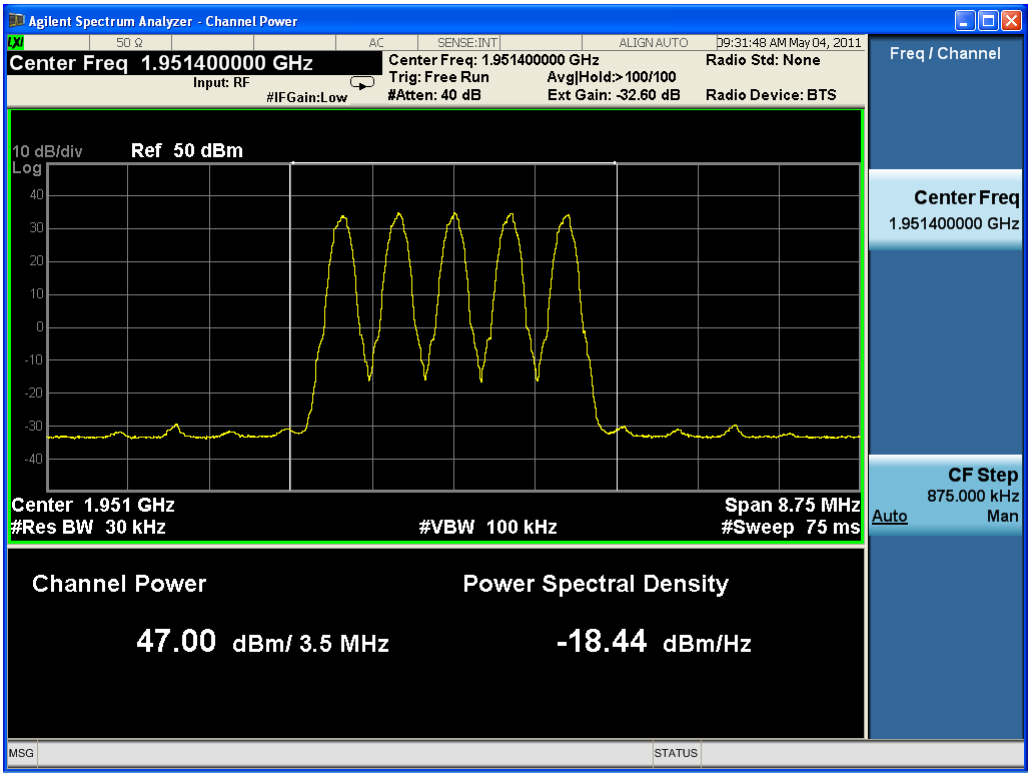

Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
09:45:51 AM May 04, 2011
Center Freq 1.951700000 GHz
Input: RF
#IFGain:Low
Center Freq: 1.951700000 GHz
Trig: Free Run
#Atten: 40 dB
Avg|Hold:>100/100
Ext Gain: -32.60 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center 1.952 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 10 MHz
#Sweep 75 ms
Center Freq
1.951700000 GHz
CF Step
1.000000 MHz
Auto
Man
Channel Power
48.94 dBm/ 4 MHz
Power Spectral Density
-17.08 dBm/Hz
MSG
STATUS

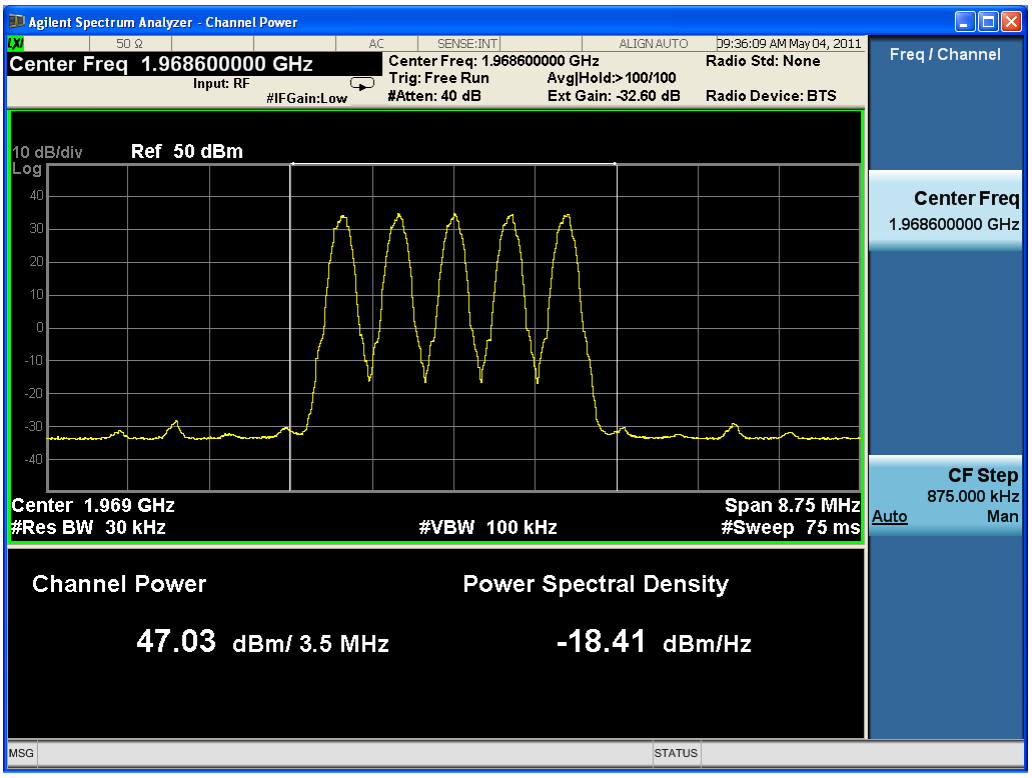


Five carriers

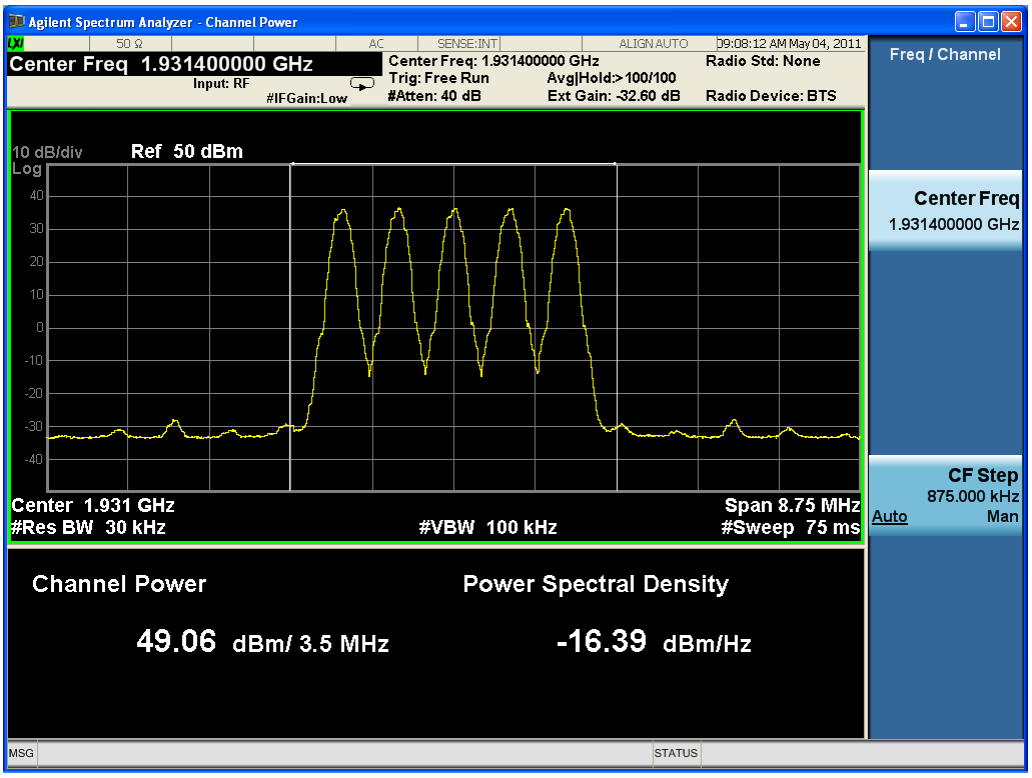
Modulation	Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
8PSK	1931.4	1930.2/1930.8/1931.4/1932/1932.6	47.02
	1951.4	1950.2/1950.8/1951.4/1952/1952.6	47.00
	1968.6	1967.4/1968/1968.6/1969.2/1969.8	47.03

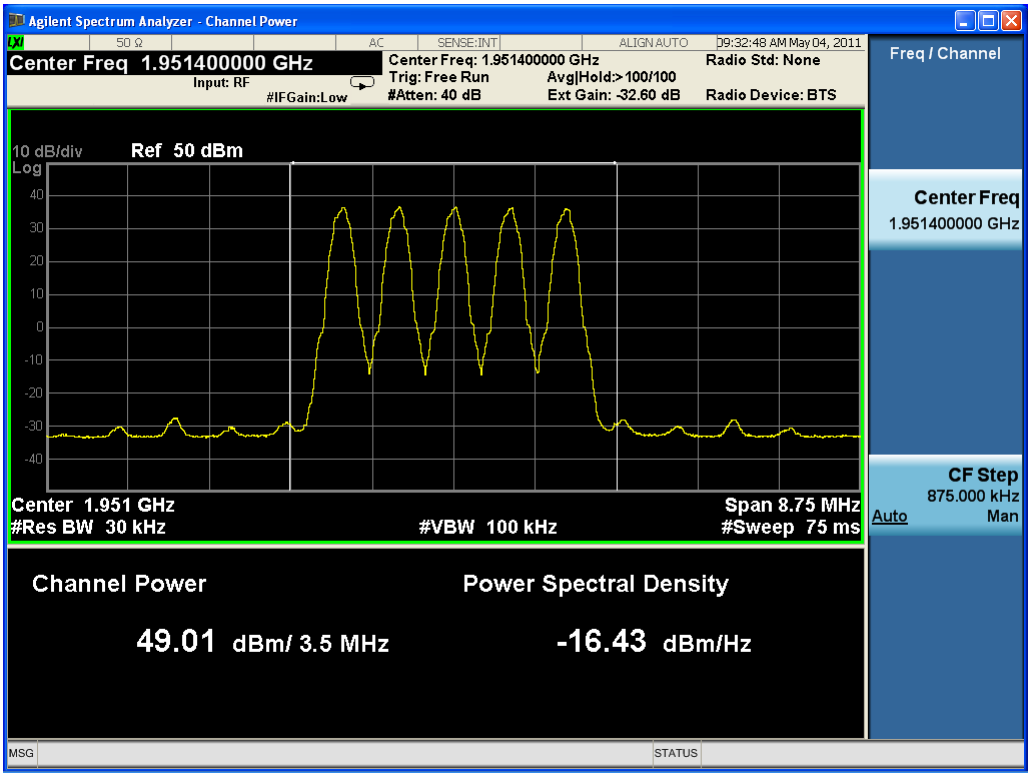

Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
09:25:15 AM May 04, 2011
Center Freq 1.931400000 GHz
Input: RF
#IFGain:Low
Center Freq: 1.931400000 GHz
Trig: Free Run
#Atten: 40 dB
Avg|Hold: 76/100
Ext Gain: -32.60 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center Freq
1.931400000 GHz
Center 1.931 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 8.75 MHz
#Sweep 75 ms
CF Step
875.000 kHz
Auto
Man
Channel Power
47.02 dBm/ 3.5 MHz
Power Spectral Density
-18.42 dBm/Hz
MSG
STATUS

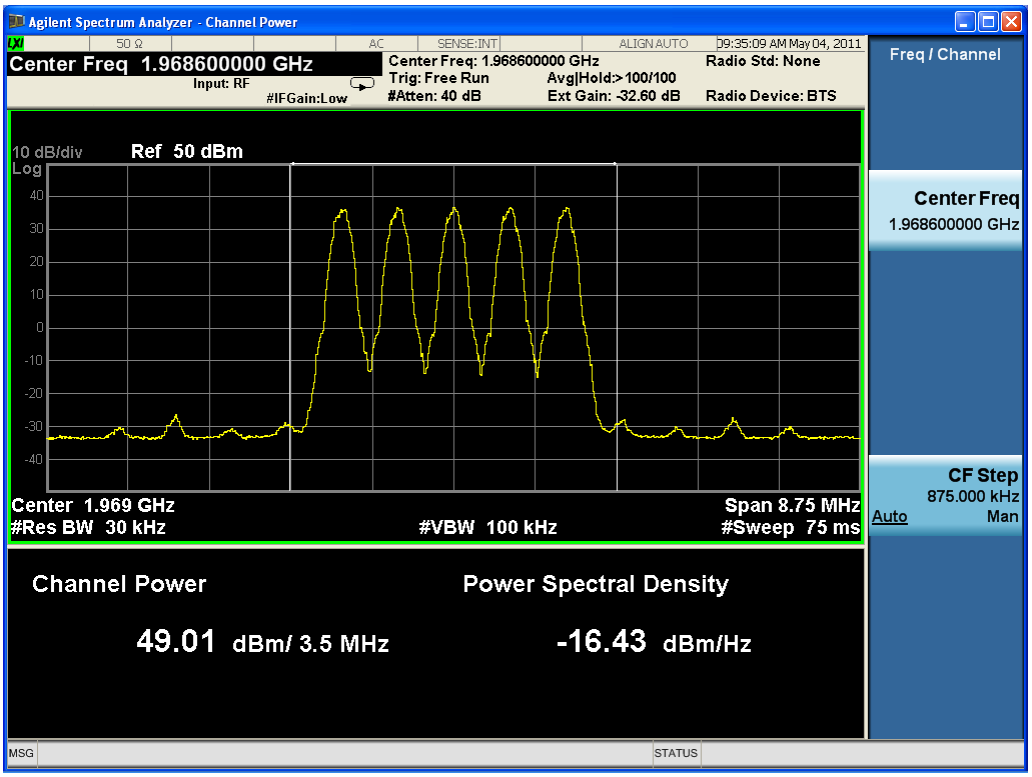

Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
09:31:48 AM May 04, 2011
Center Freq 1.951400000 GHz
Input: RF
#IFGain:Low
Center Freq: 1.951400000 GHz
Trig: Free Run
#Atten: 40 dB
Avg|Hold:>100/100
Ext Gain: -32.60 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center Freq
1.951400000 GHz
Center 1.951 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 8.75 MHz
#Sweep 75 ms
CF Step
875.000 kHz
Auto
Man
Channel Power
47.00 dBm/ 3.5 MHz
Power Spectral Density
-18.44 dBm/Hz
MSG
STATUS



Modulation	Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
GMSK	1931.4	1930.2/1930.8/1931.4/1932/1932.6	49.06
	1951.4	1950.2/1950.8/1951.4/1952/1952.6	49.01
	1968.6	1967.4/1968/1968.6/1969.2/1969.8	49.01

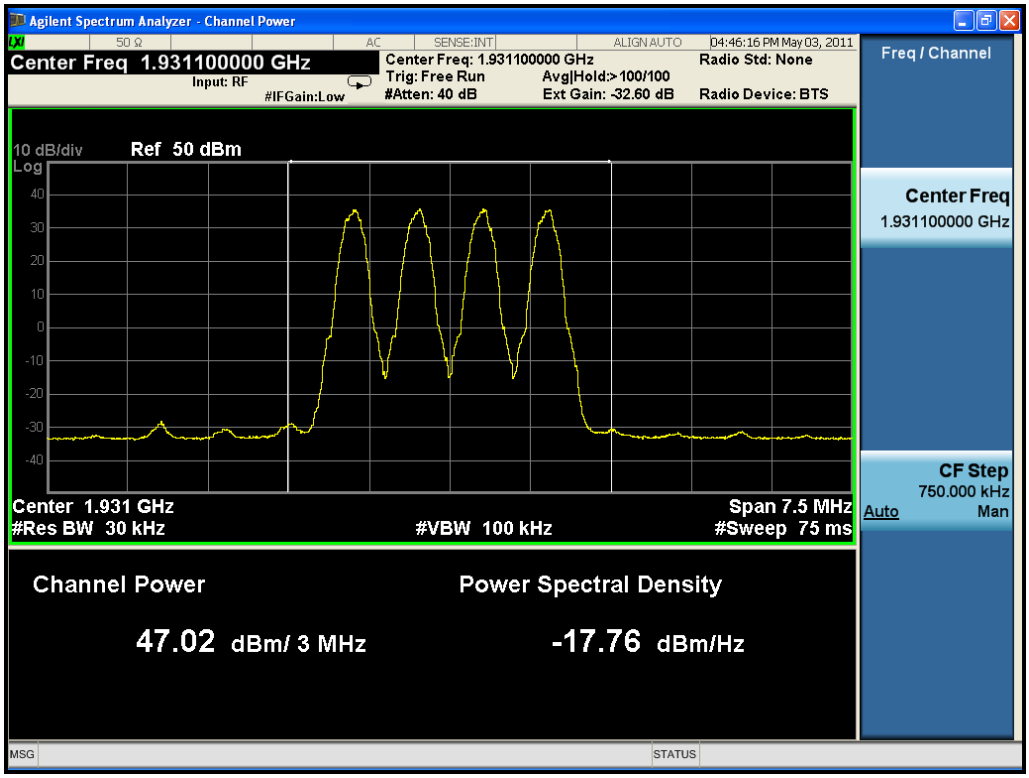

Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
09:08:12 AM May 04, 2011
Center Freq 1.931400000 GHz
Input: RF
#IFGain:Low
Center Freq: 1.931400000 GHz
Trig: Free Run
#Atten: 40 dB
Avg|Hold:>100/100
Ext Gain: -32.60 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center Freq
1.931400000 GHz
Center 1.931 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 8.75 MHz
#Sweep 75 ms
CF Step
875.000 kHz
Auto
Man
Channel Power
49.06 dBm/ 3.5 MHz
Power Spectral Density
-16.39 dBm/Hz
MSG
STATUS

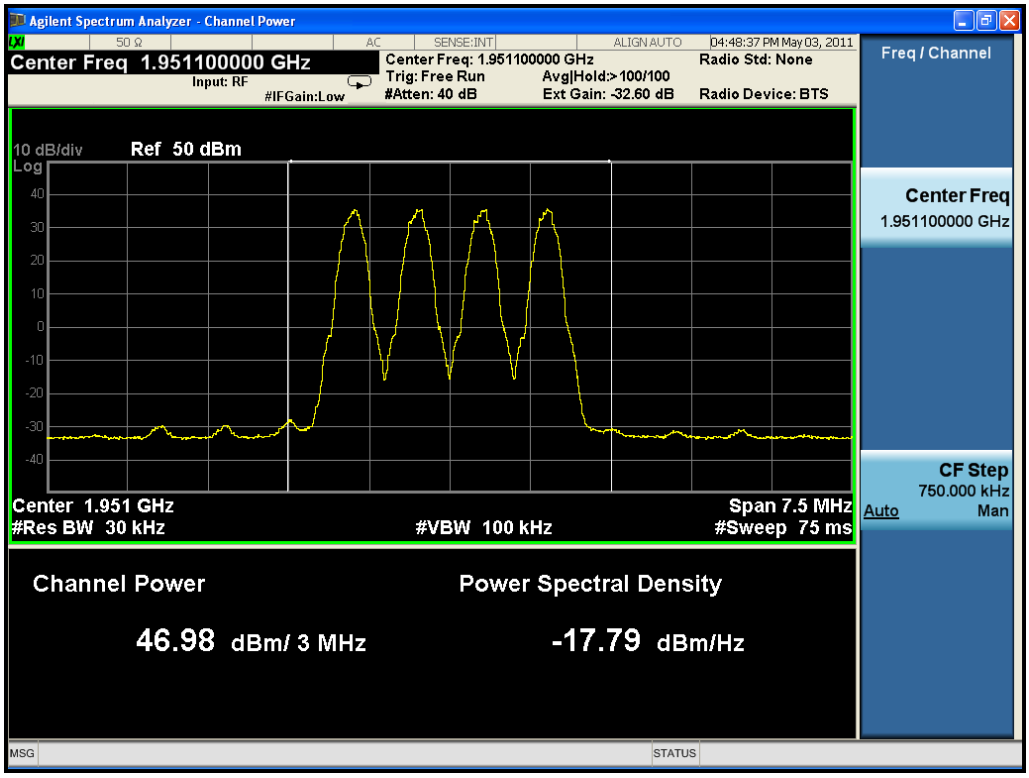

Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
09:32:48 AM May 04, 2011
Center Freq 1.951400000 GHz
Input: RF
#IFGain:Low
Center Freq: 1.951400000 GHz
Trig: Free Run
#Atten: 40 dB
Avg|Hold:>100/100
Ext Gain: -32.60 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center Freq
1.951400000 GHz
Center 1.951 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 8.75 MHz
#Sweep 75 ms
CF Step
875.000 kHz
Auto
Man
Channel Power
49.01 dBm/ 3.5 MHz
Power Spectral Density
-16.43 dBm/Hz
MSG
STATUS



Four carriers

Modulation	Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
8PSK	1931.1	1930.2/1930.8/1931.4/1932	47.02
	1951.1	1950.2/1950.8/1951.4/1952	46.98
	1968.9	1968/1968.6/1969.2/1969.8	47.08


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:46:16 PM May 03, 2011
Center Freq 1.931100000 GHz
Input: RF
#IFGain:Low
Center Freq: 1.931100000 GHz
Trig: Free Run
Avg|Hold:>100/100
#Atten: 40 dB
Ext Gain: -32.60 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center Freq
1.931100000 GHz
Center 1.931 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 7.5 MHz
#Sweep 75 ms
CF Step
750.000 kHz
Auto
Man
Channel Power
47.02 dBm/ 3 MHz
Power Spectral Density
-17.76 dBm/Hz
MSG
STATUS


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:48:37 PM May 03, 2011
Center Freq 1.951100000 GHz
Input: RF
#IFGain:Low
Center Freq: 1.951100000 GHz
Trig: Free Run
Avg|Hold:>100/100
#Atten: 40 dB
Ext Gain: -32.60 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center Freq
1.951100000 GHz
Center 1.951 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 7.5 MHz
#Sweep 75 ms
CF Step
750.000 kHz
Auto
Man
Channel Power
46.98 dBm/ 3 MHz
Power Spectral Density
-17.79 dBm/Hz
MSG
STATUS